The Milroy Lectures

ON

THE CAUSES, PREVALENCE, AND CONTROL OF PULMONARY TUBERCULOSIS.

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LECTURE III. (*continued*).[1]

Delivered on March 12th.

CERTAIN ENGLISH SANATORIUMS.

I AM afraid that the facts which I propose to bring to your notice with regard to sanatoriums may prove somewhat disappointing to those who are alone familiar with the palaces in Germany and with some of the elaborate private sanatoriums of this country. Those, too, who are connected with the King's Sanatorium scheme may, I fear, be almost disposed to cast ridicule upon the relatively humble buildings with which I propose here to concern myself. But as my remarks must be limited I can deal only with one aspect of the problem and I therefore propose to select for consideration sanatoriums which are intended for those other than the rich or comfortably circumstanced. My interest and my work lie rather in the public aspect of the problem. I shall therefore omit all references to private institutions and deal only quite incidentally with what is being done by means of private munificence. By private munificence I have in mind rather sanatoriums such as the King's Sanatorium and those institutions which have been, or are being, erected in Delamere Forest for the relatively poor of Liverpool and Manchester. All honour to the founders and promoters of these and similar institutions, but such institutions are the results of an uncertain and spasmodic force the future behaviour of which cannot be predicted or reckoned upon.

I propose, therefore, to draw attention to what is being done in certain of the counties of this country in a more or less systematic fashion. All these efforts appear, so far as I can judge, to be due, at any rate in the first instance, to the foundation of a local branch of that admirable organisation the National Association for the Prevention of Consumption and other Forms of Tuberculosis. I say this because I desire to accord the credit to the organisation which appears to me to be responsible for at least the initiation of practically all the schemes to which I am about to refer. At present there are but few sanatoriums which have been thus brought into existence, but there is, I think, every prospect that the number will be shortly materially augmented. The example has been set by the vigour of several of our northern counties, and the vigour of the north seems gradually to be extending to the south, as is borne witness to by the fact that since this lecture was delivered a committee of the three counties of Wilts, Somerset, and Gloucester has, largely through the efforts of Dr. Lionel A. Weatherly, laid the foundation-stone of a sanatorium for the tuberculous poor of this district on what Dr. J. Tubb-Thomas, the Wiltshire county medical officer of health, tells me is an ideal site of 50 acres at Winsley, near Bath. This scheme has been promoted mainly by public subscriptions, but several sanitary authorities, including those of Bristol, Bath, Swindon, and Gloucester, have made arrangements to maintain beds, as also have certain business firms and companies, among them being the Great Western Railway Company. I learn also from a report kindly sent to me by Dr. F. G. Bushnell that a sanatorium has been recently opened at Didworthy, near Brent, for the use of consumptives in the counties of Devon and Cornwall. In connexion with this institution the Plymouth board of guardians propose to subscribe for the use of one bed. In Dorsetshire Lord Ilchester has given a site and a donation for the purpose of aiding the erection of a sanatorium for the poor of that county. In Hampshire Dr. A. Mearns Fraser has endeavoured to bring about the erection of a county sanatorium, but his efforts have not as yet received the support they deserve. In Wales there are indications of progress.

But the sanatoriums to which I propose specially to refer are (1) the Westmorland Sanatorium, (2) the Durham Sanatorium, (3) the Nottingham Sanatorium, and (4) the Worcestershire Sanatorium. I have selected these institutions after visiting practically all the public sanatoriums in this country, because I think they afford the most useful lessons for future work.

The first two of these had for their beginning an existing mansion; the latter two are practically new structures. Now all four of these institutions have been originated and are carried on by local philanthropy of an administrative and pecuniary nature. But as time goes on they are tending in some degree to become what I may call semi-public institutions—that is to say, the local sanitary authorities are contributing towards the annual expenditure of the institutions and are also in some cases making such an annual contribution as to secure for themselves the right to nominate patients for one or more beds.

The Westmorland Sanatorium.[2]—I have found considerable difficulty in selecting the sanatorium the details of which in the first place to bring before you, but I think that the Westmorland Sanatorium conforms most closely to the type which is evidently, whether consciously or unconsciously, being kept in view in other schemes. My main reason, however, for selecting the Westmorland Sanatorium is not on account of the nature of the building or the excellence of the site but because its committee has up to the present succeeded better than any other in procuring the coöperation of the local sanitary authorities more immediately interested in the institution. Other schemes have developed, and are developing, upon the same lines and some of them may eventually afford better illustration of the principle I am now discussing. In what I shall have to say and to show with respect to this sanatorium I am much indebted to Dr. W. Rushton Parker who has done such excellent work in promoting the institution which owes its origin very largely to the generosity of another member of our profession, Dr. W. S. Paget-Tomlinson.

The Westmorland Sanatorium, which is erected in a picturesque position at an elevation of 110 feet and on a limestone rock formation, overlooks Morecambe Bay. It is two miles from Grange-over-Sands and 11 miles from Kendal. The sanatorium was in the first place built as a convalescent home for 16 patients, but it was hired at a rental of £70, and at an expenditure of £1200 it was converted into a hospital building for 16 consumptive patients and the necessary staff. There is now, in 1903, accommodation for 24 patients—i.e., eight in each of two wards and two in each of four sleeping shelters. But the point to which I wish particularly to draw attention in connexion with this institution is that no fewer than 21 of these beds have been appropriated by various local authorities in the county at a rate of £60 per annum for each bed. This fact is brought out by the first of the following tables. As the average cost of maintenance, however, is about 36*s.* a week there is a heavy deficit arising out of the arrangement to allow beds to be appropriated at 25*s.* a week, and as the 24 beds have never yet been filled by patients from within the county of Westmorland what may be called "outsiders" are taken in at a charge which provides a slight margin of profit.

The usual length of stay in the early cases is 12 weeks, in the moderately advanced 18 weeks, and in the quite advanced cases 24 weeks. The result of the three years' working shows that the vast majority of those admitted in the early stages, even after an average stay of three months, recover and are able to return to some years of useful work. Of the moderately advanced cases, where the average stay of the patient is four and a half months, a considerable but smaller number are able to do some useful work, though many relapse and some few soon die. The majority of the patients in the advanced cases die within a year, even after six months' treatment,

[1] Lecture I., the first and second parts of Lecture II., and the first part of Lecture III., were published in THE LANCET of July 11th (p. 73), 25th (p. 206), and August 1st (p. 297) and 8th (p. 361), 1903, respectively.

[2] This lecture was illustrated by numerous lantern slides relative to British and foreign sanatoriums.

and only a very small minority return to any useful occupation. The further experience of this sanatorium has been that much of the curative value of the institution is diminished by the presence of the advanced cases which although staying some six months in the institution are of but little use in a working sense thereafter. In order to surmount this difficulty efforts are being made to procure accommodation at some place other than the sanatorium for the relatively hopeless cases. The county council has taken the matter in hand and there is apparently a fair prospect that in the near future some such provision will be made. I have thought that it might be both useful and interesting were I to give here a table from the last annual report of the Westmorland Sanatorium showing the source of income and the expenditure (Table I.), as also other tables (Tables III., IV., and V.) with regard to the history of the several groups of patients. We are probably all familiar with tables relative to German sanatoriums, but the Westmorland figures will have greater interest for Englishmen. I venture to think that these tables may be very instructive reading to many persons outside the limits of our own profession. The table relating to "consumption slight" (Table II.) is of great interest as an illustration of the importance of securing patients in the earliest stage of the malady. In each class the cases are marked off into three distinct years. It is important to note that throughout the tables where tubercle bacilli are "not found" it is not invariably the case that they have been diligently sought.

The Durham County Sanatorium.—This institution, which was founded in 1900 by the Durham branch of the Society for the Prevention of Consumption and other Forms of Tuberculosis, is situated just outside the village of Stanhope in the Wear valley, and Mr. John Gray, the medical officer, was good enough to show me over the institution and to furnish me with photographs which I now exhibit. The site, which is an attractive one, consists of two and a half acres of land at an elevation of some 700 feet above ordnance datum and the neighbourhood of the sanatorium is admirably suited for the exercise of the patients. It is well protected both naturally and by means of a high wall which encircles the grounds. The main building consists of a country house altered in such fashion as to serve the needs of an open-air sanatorium. A new wing has now been added and this, with the addition of a detached building which has been converted into bedroom accommodation, brings the total number of beds up to 29—i.e., 20 for females and nine for males. It is hoped soon to extend the buildings so as to provide for 40 patients. The house and grounds are at present held on an 80 years' lease at a rental of £35 per annum. The sanatorium is supported by the payments of patients, by subscriptions from local sanitary authorities, from industrial societies and other groups of workmen, as also by voluntary subscriptions. For instance, the income

TABLE I.—STATEMENT OF ACCOUNTS OF WESTMORLAND SANATORIUM FOR THE YEAR ENDING DEC. 31ST, 1902.

General Maintenance Fund.

Income.	£	s.	d.
Westmorland County Council (two free beds)	120	0	0
Kendal Corporation (free bed)	60	0	0
Kendal Guardians (free bed)	60	0	0
East Ward Guardians (free bed)	60	0	0
West Ward Guardians (free bed)	60	0	0
South Westmorland Rural District Council (free bed)	60	0	0
Kendal (four free beds)	241	6	6
Windermere and Bowness (two free beds)	117	2	6
Milnthorpe, Arnside, and Beetham (free bed)	58	17	6
Ambleside (free bed)	66	9	6
Kirkby Lonsdale (free bed)	75	0	6
Sedgwick and Endmoor (free bed)	60	0	0
Heversham and Levens (free bed)	60	0	0
Appleby and Kirkby Stephen (free bed)	59	2	5
Burneskie (free bed)	60	0	0
West Ward (free bed)	60	0	0
General subscriptions	231	9	6
Donations	26	7	9
Barton garden party	4	6	6
Payments from patients through Kendal Charity Organisation Society, &c.	54	15	6
Extra patients at 2*s.* per week	18	2	6
Non-county patients at £2 2*s.* per week	247	5	6
Extra payments from South Westmorland Rural District Council	25	0	0
Collecting box	2	18	6
Sale of waste food	4	15	0
	£1892	19	8

Expenditure.	£	s.	d.	£	s.	d.
I.—PROVISIONS:—						
Meat	317	3	6			
Bread and groceries	205	6	3			
Milk, butter, and eggs	246	11	10			
Fish, poultry, vegetables, fruit	126	9	10			
Malt liquors	4	0	0			
				899	11	5
II.—MEDICAL:—						
Drugs and disinfectants	40	9	5			
Wines and spirits	3	13	6			
				44	2	11
III.—DOMESTIC:—						
Laundry	70	4	6			
Coal, coke, and oil	60	19	6			
Carriage of parcels	2	16	9			
Hire of conveyances, carting, &c.	17	10	0			
Sundries—Matron's	26	18	5			
,, General	21	15	4			
				200	4	6
IV.—ESTABLISHMENT CHARGES:—						
Rent and taxes	77	0	0			
Repairs and renewals	116	16	2			
Man's wages	63	3	0			
Stable expenses	23	8	5			
				280	7	
V.—SALARIES AND WAGES:—						
Medical superintendent	169	1	4			
Matron	60	0	0			
Nurses	59	4	0			
Servants	85	11	4			
				373	16	8
VI.—ADMINISTRATION:—						
Printing and stationery, &c.	39	5	10			
Stamps, telegrams	9	9	11			
				48	15	9
Commission and postages, less interest, June 30th				1	2	8
Interest, &c., December 31st				2	0	10
				1850	2	4
Balance transferred to building fund				42	17	4
				£1892	19	8

for the year ended April 30th, 1902, was £1556 17*s.* 4*d.*, and towards this sum the following amounts were contributed: weekly payments by patients, £840 15*s.* 10*d.*; payments of bodies of workmen, £301 18*s.*; from local authorities, £170; and from annual subscribers, £189 15*s.* 6*d.*; making a total of £1502 9*s.* 4*d.* The weekly charge for those patients who are able to pay is £2, but the committee has discretionary power to remit either the whole or part of this sum. As a general rule, no patients are allowed to stay longer than 16 weeks and the same patient cannot, except in exceptional circumstances, be admitted twice in the same year.

Dr. William Robinson of Sunderland, to whose efforts the erection of the sanatorium is in large part due and to whom I am indebted for the information here given, tells me that during the first year, with 12 beds, the weekly cost per patient was 31*s.* 10*d.*; during the second year, with 18 of land presented by the Duke of Portland. The soil is gravel and the sanatorium stands in grounds which are covered with pine trees and heather and from which an admirable view of the surrounding country is obtained. The cost of erection, furnishing, lighting, sewering, water-supply, &c., slightly exceeded £5000 and this sum was provided solely by voluntary subscription. Among the public bodies subscribing were the corporation of Nottingham (£1000) and the town council of Mansfield (£200).

The building itself is a wooden structure erected upon a brick base and having a galvanised iron roof. The central portion of the structure, which has two storeys, is devoted to administrative purposes and is of such dimensions as to afford accommodation for a larger number of patients than the institution at present contains. Running out from each side of this administrative centre is a wing for the accommodation of patients, one wing for males and the other for

TABLE II.—GIVING PARTICULARS OF 30 CASES OF CONSUMPTION TREATED IN WESTMORLAND SANATORIUM IN WHICH THE DISEASE WAS SLIGHT.

Consolidation barely detectable; tubercle bacilli rarely found; no high fever.

Case.	Sex.	Weeks in sanatorium	Weight gained in pounds.	Bacilli.	Previous illness.	State on admission.	Months since discharge.	History after discharge.
1	M.	8·2	7	Not found.	2 months.	Both lungs slightly affected.	30	Full farm work 2½ years.
2	F.	15·2	15¼	,,	Few months.	One lung slightly affected.	24	Quite well; at school 2 years.
3	M.	23·5	22½	,,	,,	Both lungs slightly affected.	24	Railway checker 2 years; quite well.
4	M.	17·2	7¼	,,	15 months.	One lung slightly affected.	17	Joiner nearly 1½ years; quite well.
5	M.	4·6	10	Not found.	6 months.	One lung slightly affected.	20	Mill work 1½ years; quite well.
6	M.	20·5	14¾	,,	5 ,,	One lung distinctly affected.	15	Groom over a year; well.
7	F.	10·2	12	,,	5 ,,	Pleurisy (? tuberculous).	15	Housework 1¼ years; quite well.
8	F.	7·4	3	,,	9 ,,	No undoubted signs.	15	,, ,,
9	M.	17·1	17½	,,	1 year.	One lung slightly affected.	10	Joiner 10 months; quite well.
10	F.	9·5	3¾	,,	18 months.	,,	12	Housework 1 year; quite well.
11	M.	8	14¾	,,	2 weeks.	,,	13	Stable work 1 year; quite well.
12	M.	21·4	10¼	,,	1 month.	,,	7	Dairy lad; quite well.
13	F.	12·2	11	,,	4 months.	,,	10	In service 10 months; quite well.
14	M.	12	35½	,,	1 month.	,,	9	Convalescent after severe pleurisy.
15	F.	8·3	8¼	Not found.	2 months.	One lung slightly affected.	10	Relapsing.
16	M.	11	2¼	,,	1 month.	,,	9	At school; quite well.
17	M.	7	16½	,,	1 week.	Two lungs slightly affected.	9	Errand lad; relapsing.
18	M.	8	13	,,	1 month.	One lung slightly affected.	9	Mill work; well.
19	M.	15·5	14¼	,,	2 months.	,,	6	Gardener; well.
20	M.	13	5½	,,	2 years.	,,	7	At work; quite well.
21	M.	13·5	10¾	,,	1 year.	,,	5	Labourer; quite well.
22	F.	9·4	15	,,	3 months.	,,	5	Working; in splendid health.
23	M.	8	15½	,,	2 weeks.	,,	5	Policeman; quite well.
24	F.	15·2	8½	,,	1 month.	,,	1	At home; quite well.
25	F.	—	—	,,	,,	Two lungs slightly affected.	Still in.	—
26	M.	7·2	19¼	,,	5 months.	One lung slightly; pleuritic effusion.	1	At work and well.
27	F.	—		,,	3 months.	One lung slightly affected.	Still in.	
28	M.	3·2	3½	,,	1 month.	,,	1	Quite well.
29	M.	—		,,	—	,,	Still in.	
30	F.	—	—	,,	—	,,	,,	

patients, about 28*s.*; and it is expected that with 29 patients the cost will work out at about 25*s.* These figures include all expenses. By the scheme of maintenance adopted the sanatorium is almost self-supporting, only one-sixth of the income coming from private subscriptions. The committee may therefore claim to have solved the difficulty of maintaining a sanatorium for the working classes. I give further on a table (Table VI.) taken from the medical officer's last annual report.

The Nottinghamshire Sanatorium.—My object in bringing this sanatorium to the notice of the College is that the institution, which was founded in 1901, largely through the efforts of Dr. W. B. Ransom of Nottingham, for persons of limited means, affords an illustration of the cost of what is known as a "temporary"—i.e., wooden—building. The sanatorium is erected at Ratcher Hill in Sherwood Forest, near Mansfield, upon an elevated site consisting of 50 acres females. There is a small single ward in connexion with each wing and on either side of the main wards is a glass-roofed verandah, closed at either end and open in front, which acts as a *Liegehalle* and in which certain of the patients sleep during the night. In the grounds close to the sanatorium are two single shelters for male patients.

The details of the building are those usually found in the better-class "temporary" buildings—i.e., the walls are constructed of two layers of felt-lined boarding separated by an air space, the inner surface of the walls being so treated as to afford facilities for cleansing and disinfection. Ventilation is provided for by windows and in the roofs of each large ward are two extraction shafts. Lighting is by means of electric light generated upon the site and warming by means of low-pressure pipes arranged in the form of radiators. The lavatories are disconnected from the wards and the sewage is conveyed to a distance and treated on biological lines. The

TABLE III.—GIVING PARTICULARS OF 48 CASES OF CONSUMPTION TREATED IN WESTMORLAND SANATORIUM IN WHICH THE DISEASE WAS ADVANCED.

Cavity or extensive consolidation; often considerable fever; tubercle bacilli usually found abundantly.

Case.	Sex.	Weeks in sanatorium.	Weight gained in pounds.	Bacilli.	Previous illness.	State on admission.	Months since discharge.	History after discharge.
1	M.	18·2	10¼	Found.	3 years.	Large consolidation in two lungs.	29	Died in 16 months.
2	F.	10	11	,,	5 years.	Cavity + consolidation.	31	Died in 9 months.
3	M.	28·5	30½	,,	4 years.	Large consolidation in one lung.	26	Clerk over 2 years; quite well.
4	M	19·4	8	,,	5 months.	Large consolidation in two lungs.	28	Died in 7 months.
5	F.	17	7	,,	9 months.	Consolidation in two lungs; fever.	29	,,
6	F.	46·1	8½	,,	6 months.	Consolidation extensive.	21	Died in 9 months.
7	F.	19·2	22	,,	3½ months.	Consolidation in one lung.	26	Died in 12 months.
8	M.	43·2	17½	,,	8 months.	Consolidation in two lungs; fever.	21	Died in 10 months.
9	M.	41·1	3	Not found.	1 year.	Cavity; fever; kidney affected.	21	Died in 12 months.
10	F.	12·5	6½	Found.	2 years.	Consolidation in two lungs; fever.	27	Died in 8 months.
11	F	8·4	14	,,	1½ years.	Cavity in one lung.	9	Invalid.
12	F.	43·4	3	,,	8 years.	Large consolidation in one lung.	16	,,
13	F.	22·3	4½	,,	1 year.	Consolidation in one lung; high fever.	21	Died in 4 months.
14	F.	26	9	,,	,,	Consolidation in two lungs; fever.	20	Died in 2 months.
15	M	28	2	Not found.	Few months.	Advanced bowel consumption.	19	Died in 8 months.
16	M.	26·2	4½	Found.	4 years.	Consolidation in one lung; bowel consumption.	13	Died in 3 months.
17	M	7·1	0	Found.	1 year.	Laryngeal tubercle; high fever.	22	Died in 10 days.
18	M.	32·2	28½	,,	13 years.	Old empyema.	16	Caretaker 16 months; weak.
19	F.	45·3	- ½	,,	Many years.	Cavity; abscesses in neck, &c.	12	Died in 6 months.
20	M.	8·1	½	,,	4 years.	Cavity + consolidation; fever.	20	Died in 9 months.
21	F.	9·2	5½	,,	3 years.	Large consolidation in one lung.	20	Died in 4 months.
22	M.	16·4	3	,,	8 months.	Consolidation in two lungs; fever.	17	Invalid.
23	F.	37·4	6½	,,	14 months.	Cavity in one lung.	½	—
24	M.	21·6	7	,,	10 months.	Cavity in two lungs.	15	Died in 7½ months.
25	M.	28	7	,,	6 months.	Cavity + consolidation.	13	Died in 4 months.
26	M.	14·4	13½	Not found.	?	Cavity in one lung.	16	Quite well for 16 months.
27	F.	24·3	22½	Found.	3 years.	,,	12	Housework 1 year; fairly well.
28	M.	17·5	11	,,	5 years.	Cavity + consolidation.	13	Invalid.
29	F.	5·6	0	,,	9 months.	,,	15	Died in 6 months.
30	F.	12·1	8	,,	4 months.	Cavity in one lung.	12	Died in 10 months.
31	F.	43·2	14	,,	1½ years.	,,	5	Invalid.
32	F.	14	12	,,	,,	,,	11	Died in 7 months.
33	M.	29·4	15	,,	3 years.	Cavity + consolidation; fever.	6	Ticket collector 6 months; well.
34	M.	2·2	0	,,	2½ years.	Cavity + consolidation.	12	Died in 5 months.
35	F.	12·4	9½	?	2 years.	Consolidation marked.	9	Invalid.
36	M.	31·6	16½	Found.	3 months.	Cavity in one lung.	5	In excellent health.
37	F.	42	- 12	,,	6 weeks.	Consolidation in one lung; fever.	½	—
38	M.	21·3	4½	,,	1 month.	Consolidation in one lung.	4	Doing light work.
39	F.	24	11½	,,	2 years.	Cavity in one lung; fever.	3	In good health.
40	F.	12·5	9½	,,	,,	,,	4½	Invalid with hip disease.
41	M.	8	6½	,,	7 months.	Cavity in one lung.	5½	Relapsing; invalid.
42	F.	18	12½	,,	2 years.	Cavity in one lung; fever.	2½	Died in 2 months.
43	F.	15·3	19	Not found.	3 years.	Huge neck glands; lung consumption slight.	1	—
44	F.	—	—	Found.	1 year.	Large consolidation in one lung.	Still in.	—
45	F.	18	11½	,,	,,	Cavity in one lung.	0	—
46	F.	—	—	,,	2 years.	Cavity in one lung; hæmoptysis.	Still in.	—
47	F.	—	—	,,	12 months.	Consolidation in two lungs; abscesses; fever.	,,	—
48	M.	—	—	,,	6 months.	Cavity in one lung; hæmoptysis.	,,	—

N.B.—Cavity + consolidation means cavity in one lung and consolidation in the other.

water-supply is from the Mansfield public supply. There are several out houses devoted to such purposes as electric light, laundries, stabling, &c. The annual cost per bed is about £65. This figure includes cost of medical advice, nursing attendance, and all current expenses.

Persons applying for admission must (1) satisfy the committee that they are unable to pay for treatment at a private institution or to obtain proper treatment at home and (2) be certified by one of the consulting physicians to be in such a stage of the disease as to afford reasonable expectation of permanent improvement or cure. Subscribers of one guinea per annum are entitled to one recommendation valid period from which good results to the patient are anticipated. We have, then, here a temporary structure which provides administrative accommodation for more than the 24 patients at present taken in. Such accommodation cost over £5000 exclusive of the cost of the site—i.e., the cost per bed amounted to about £220. But this is hardly a fair way of stating the problem since much of the cost expended in the administrative buildings, electric lighting, sewerage, water-supply, roads, &c., will furnish accommodation for a larger number of patients, and an addition to the number of shelters would provide a greater number of beds at a comparatively insignificant cost.

TABLE IV.—GIVING PARTICULARS OF 15 CASES OF CONSUMPTION TREATED IN WESTMORLAND SANATORIUM IN WHICH THE DISEASE WAS SERIOUSLY COMPLICATED.

Some serious non-tuberculous complication—e.g., heart disease, chronic bronchitis with asthma, &c. ; consumption mostly slight.

Case.	Sex.	Weeks in sanatorium.	Weight gained in pounds.	Bacilli.	Previous illness.	State on admission.	Months since discharge	History after discharge.
1	F.	13·3	3¾	Not found.	15 years.	Asthma; consumption slight.	30	Just earns living as domestic.
2	M.	18·6	15	Found.	5 months.	Fibroid liver and kidney; consumption obvious.	26	Invalid.
3	M.	30·4	26¼	Not found.	2 years.	Neurasthenia; consumption slight.	19	,,
4		21·3	20¼	,,	6 years.	Asthma; consumption slight.	12	Asthmatic; usual housework.
5	M.	5·5	7¾	Not found.	—	Heart disease; consumption doubtful.	10	Disabled by a stroke.
6	M.	26·5	14½	,,	2 years.	Heart disease; consumption obvious.	13	Full mill work; health excellent.
7	M.	17·1	1½	,,	2 months.	Heart disease; consumption doubtful.	9	Died from a stroke in three months.
8	F.	11·3	10¾	,,	10 years.	Asthma; consumption obvious.	10	Usual housework.
9	M.	6·6	3¾	Not found.	3 years.	Asthma; consumption slight.	8	Semi-invalid.
10	F.	10	1½	,,	10 years.	,, ,,	7	Well.
11	F.	6·5	6	,,	7 years.	,, ,,	7	Usual housework.
12	M.	13·1	13	,,	2 years.	,, ,,	2	Asthmatic invalid.
13	F.	10·5	15½	,,	10 years.	,, ,,	2½	Housework; well.
14	F.	11	22¼	,,	4 months.	,, ,,	2	Invalid.
15	M.	4	2¾	Found.	6 weeks.	Heart disease; consumption slight.	¼	—

TABLE V.—GIVING PARTICULARS OF 10 CASES OF CONSUMPTION IN WHICH THE PATIENTS WERE REJECTED AS HOPELESS.

Consumption far too advanced for any likely benefit.

Case.	Sex.	Weeks in sanatorium.	Weight gained in pounds.	Bacilli.	Previous illness.	State on admission.	Months since discharge	History after discharge.
1	F.	1·3	—	Not sought.	?	Cavity; high fever.	33	Died in 2 months.
2	M.	2	—	,,	9 months.	Cavity + consolidation.	32	Died in 10 days.
3	M.	3·1	—	,,	7½ years.	Cavity in one lung.	30	Died in 8 months.
4	M	1·5	—	,,	6 months.	Cavity + consolidation.	29	Died in 6 weeks.
5	M.	1·1	—	Not sought	1 year.	Cavity.	19	Died in 2 weeks.
6	M.	2·1	—	,,	4 years.	Cavity in one lung; fever.	18	Invalid 1½ years.
7	M.	0·1	—	,,	2½ years.	Cavity; high fever.	18	Died in 2 days.
8	M.	0·4	—	Found.	5 years.	Cavity + consolidation; fever.	6	Died in 4 months.
9	F.	0·6	—	,,	5 years.	Cavity + consolidation.	5	Died in 3 weeks.
10	F.	1·5	—	—	6 months.	High fever; bowel tuberculosis; heart disease.	¼	—

for a week in each year, but persons, or groups of persons, who pay the cost of maintenance of a bed for at least three months shall have the sole right of nominating patients for that bed—i.e., an annual subscription of £20 gives the right of nomination to a free bed for three months, or a subscription of £12 10*s.* to a bed in which the patient pays 10*s.* a week for the same period.

The sanatorium committee expresses the hope that friendly societies, workmen's clubs, charity organisations, &c., will see their way to secure nomination for patients for from three months to a year, three months being the minimum

The Worcestershire Sanatorium.—I am indebted to Mr. G. H. Fosbroke, the county medical officer of Worcestershire, who, with Dr. H. E. Dixey, is largely responsible for this scheme, for the details with regard to it and for kindly showing me over the institution. The sanatorium which was opened in November, 1902, occupies an admirable situation 300 feet above ordnance datum on the western slopes of the Ankerdine Hills at Knightwick, not far from Worcester. The site, which embraces 30 acres of land, formed until recently, with a house and lodge, a country seat, but it has now been taken over by five trustees, as the Worcestershire

county council did not feel itself able to accept a certain provisional offer on the part of the owner of the property. The county council, however, voted £300 towards the expenditure necessary. Since the estate has been taken over two substantially constructed electric-lighted shelters, one for eight males and the other for eight females, have been erected out of moneys provided by public subscription The patients are admitted by a medical board comprising four medical men and one layman and the current expenses are furnished by public subscription and by the contributions from employers and bodies of workmen. An annual subscription of £75 gives the right to nominate suitable patients to one bed for a year and the King's Norton board of guardians is among those which thus secure a bed. A few paying patients are admitted at a charge of 30*s.* per week. There are a resident medical officer and a complete staff.

TABLE VI.—*Summary of Results of First Two Years.*

Year.	Cases discharged after treatment.	Condition on April 30th, 1902.		
		At work.	At home.	Dead.
1900-01... ...	"Cavity" 20	6	2	12
,, ...	"Consolidation" 16	12	2	2
1901-02... ...	"Cavity" 25	12	8	5
,, ...	"Consolidation" 30	23	5	2
Totals ...	 91	53	17	21

I must in passing make reference to the experiment which is being made at Clare, in Suffolk, through the efforts of Dr. Jane Walker who has rented a cottage in that village for the purpose of providing accommodation for those who are unable to pay even the low weekly sum of from two to three guineas demanded by the more humble sanatoriums. Dr. Walker has, I understand, found that a charge of 15*s.* per week, exclusive of washing, is sufficient to pay all expenses save the cost of rental, which in this case is a relatively insignificant sum. I was glad, therefore, to learn when visiting the East Anglian Sanatorium at Nayland that Dr. Walker hopes to be able to provide accommodation for a certain number of less well-to-do consumptives upon a remote portion of that truly admirable site and under conditions which will in no sense interfere with the privacy of the present sanatorium.

It is impossible to state at all accurately the number of sanatoriums which at present exist in the British Isles because in the first place it is difficult to decide upon what basis the computation is to be made, and in the second because there is no system of compulsory registration of such institutions in force.

But, excluding Poor-law institutions and including hospitals for consumption and homes for the dying, there would appear to be, approximately speaking, about 60 institutions, public or private, at which cases of pulmonary tuberculosis may be accommodated. The number of beds which are embraced by these institutions is probably under 2500 and assuming each bed to be occupied for three months there may be in England and Wales, Ireland and Scotland, some 10,000 beds available annually. If to this number the accommodation available at workhouses and infirmaries be added the total must be very materially augmented.

Now I cannot pretend to take part in the discussion as to the relative values *qua* cure of large and small establishments. The matter is doubtless one of importance, but I hope I shall be forgiven if I venture to suggest that it is subordinate to the main issue, and it is the main issue which in this vast problem of tuberculosis we must, I think, be careful to keep before our eyes.

So far as I can judge, the main object in the provision of sanatoriums is to secure means whereby the tuberculous patient may be taken out of the environment in which he either contracted or developed his illness and to put him under conditions in which he may cease to furnish hospitality to the tubercle bacillus. The most important factors in promoting this alteration of tissue are an abundant supply of suitable food, rest, fresh air, light, and freedom from anxiety. These essentials can be provided almost as well in a small, suitably constructed establishment as in a large three-storeyed institution, the adequate ventilation of which is somewhat difficult of attainment, and hence I question the desirability of waiting until a marble palace can be provided and in the meantime allowing an uncertain number of people to die whose lives might otherwise be prolonged. Obviously, a suitable site must be procured, but much of this is a very relative matter; some sites are altogether unsuitable, but between the best and the second best the rate of recovery among the patients is not perhaps so very great. I am reminded by an admirable address by Dr. William Robinson of Sunderland that Dr. Léon Petit once said: "In all sanatoriums, whatever their geographical position, the curative results obtained are nearly the same, provided that the hygienic method is applied there in all its scientific rigour." It is for this reason that in the short sketch I have given of the subject I have dwelt upon the more humble accommodation which is at present being made in several parts of the country.

Homes for advanced consumptives.—Looked at from a purely preventive standpoint there is obviously far more importance to be attached to the control of cases which are likely, owing to their domestic environment, to be some danger to the community than there is to be attached to those cases which are in the earlier stages of the disease but who are expectorating little, if at all.

Although we may not altogether agree with Professor Koch that the action hitherto taken in this country in the direction of isolation has been the important factor which he supposes in bringing about the diminution of the disease, we must, I think, recognise the utility of providing accommodation for such cases as appear from their environment to be a source of special danger. In saying this I do not wish to lose sight of the proportions of the issue or to suggest for one moment that there shall be anything approaching compulsory isolation even for advanced cases. My point is simply this: that accommodation for advanced cases housed under obviously unwholesome and, for their relatives, dangerous conditions would be desirable. This aspect of the question has been recently faced in a practical fashion by the Westmorland county council, and Dr. Rushton Parker has written a highly suggestive paper upon the subject. I will draw attention to a few of his more important points, as they bring out the practicability of schemes of this nature and present the matter in a very concrete form. Dr. Parker thinks that about 35 out of the 50 or 60 deaths which occur annually in Westmorland from tuberculosis might, were there an institution for advanced cases, die therein. He thinks that a home with 20 beds would suffice for 40 cases remaining six months each and he calculates the total cost per annum to be about £1300, or £65 a bed. About one-sixth of the cases would, he thinks, be chargeable to the guardians. The county council has, he states, legal power to provide such a home and the cost thereof would be covered by a penny rate. He points out that the 8000 consumptives in the English workhouse infirmaries cost £600,000 a year, or £75 per head.

I regret that time will not enable me to refer to the work which is being done in connexion with towns such as Manchester, Liverpool, and Leeds, but I shall hope at a later date to say something as to this.

In bringing these lectures to a close it is perhaps hardly necessary for me to add that all those who are engaged in this endeavour to lighten the burden of tuberculosis upon the human species have my very fullest sympathy. My object in examining the problem somewhat critically has been to prevent, if possible, the reaction which I fear is inevitable unless the more extreme views are a little toned down and prophecies as to the early extinction of the disease through the agency of sanatoriums alone are less freely indulged in. It is the obvious duty, as it is clearly the desire, of all to heal the tuberculous sick and to protect the weakly against the disease. As to this all who face the matter seriously are in agreement. Our differences are merely as to the degree of communicability of the malady and as to the relative importance of each of the factors proposed to hasten the continued decline of the disease.

If I were told to select three, and three only, of the agencies with which I have in some degree dealt in these lectures as those upon which, assuming always a sufficiency of food, I would place most reliance as regards the control of pulmonary tuberculosis, I should arrange them somewhat in this order. 1. The education of older children in the principles of health, and the periodical physical examination of all school children with a view to improving the health of those prone to tuberculosis or who may already

be suffering from the disease in an unrecognised though not unrecognisable form. The direct and indirect results which would accrue from this would soon make themselves felt in the direction of an unwillingness on the part of the people to occupy slums or to dwell in places where the sun rarely penetrates. It would also result later in a return to local and perhaps central administrative bodies of representatives who were more alive to the importance of the public health aspect of their duties than is always the case at the present time. 2. Some such system of compulsory insurance against sickness and invalidity as obtains in Germany and which, it is important to note, makes for the provision of sanatoriums, the support of those threatened with illness, and the general well-being of the poorer classes. 3. Better housing and improved conditions of employment of the working-classes—i.e., more light, more air-space, better ventilation, and greater cleanliness in the home, the workshop, and the factory.

And now, in conclusion, may I, Mr. President and Fellows, thank you once more for the honour you have done me in appointing me to deliver these lectures and may I also express my great appreciation of the attention with which you have been good enough to follow my efforts to examine dispassionately certain aspects of this absorbing problem.

A Lecture
ON
INFANTILE SCURVY.

Delivered at the Medical Graduates' College and Polyclinic

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LADIES AND GENTLEMEN,—Infantile scurvy is a disease which has only received recognition during the last 30 years. Owing to the growing practice of bringing children up "on the bottle" cases are encountered with increasing frequency. It was mainly at the Hospital for Sick Children, Great Ormond-street, that its nature was first recognised by Dr. W. B. Cheadle and its natural history, pathology, and symptomatology were completely worked out by Sir Thomas Barlow. It is true that isolated cases of the condition had been previously met with, but except in one case recorded by Ingersley their scorbutic nature was not recognised. The first case published in this country was recorded in 1876 by Sir Thomas Smith, then surgeon to the Great Ormond-street Hospital, as Hæmorrhagic Periostitis of several of the long bones with separation of the epiphyses,[1] but the nature of the hæmorrhage was not recognised. In 1878 Cheadle published Three Cases of Scurvy supervening on Rickets in Young Children[2] and insisted on its identity with the scurvy of adults. In 1881 Gee published, in the St. Bartholomew's Hospital Reports, a series of cases under the name of Osteal or Periosteal Cachexia and in 1882 Cheadle again maintained the scorbutic nature of the affection in a second paper on Osteal or Periosteal Cachexia and Scurvy.[3] Cases were also published in Germany under the title of Acute Rickets. But while the credit of pointing out the nature of the affection belongs to Cheadle, it was a remarkable paper read by Barlow in 1883 before the Royal Medical and Chirurgical Society which secured general recognition of Cheadle's views. This paper was entitled "On Cases described as Acute Rickets which are probably a Combination of Scurvy and Rickets, the Scurvy being an Essential and the Rickets a Variable Element." Illustrative clinical cases were minutely described, together with an exhaustive analysis of the post-mortem examination in three of them (one being the case published in 1875 by Sir Thomas Smith). The original paper should be read by everyone interested in the subject; it is a model of observation, description, and accurate reasoning and so complete that little has been added to our knowledge since and scarcely a line would require any modification to-day. After the publication of this paper the essentially scorbutic nature of the affection quickly gained general recognition and at the present time it is known in France and Germany as "Barlow's disease." The name "acute rickets" died hard and was followed in this country by "scurvy rickets." At the present time, however, Barlow's contention that rickets is an accidental association and is not invariably present has gained general acceptance and the term "infantile scurvy" is more frequently and appropriately employed. During the last 20 years many cases have been published. Barlow himself took up the subject in the Bradshaw lecture delivered by him at the Royal College of Physicians of London in 1894 and Cheadle summed up our knowledge in an admirable article in Allbutt's "System of Medicine," vol. v., in 1898. There is yet, however, much left obscure in connexion with the way in which scurvy is brought about, although we know that one constant factor is the absence of sufficient quantity of certain kinds of fresh vegetable or animal food. These matters will be more fully discussed later.

Symptoms.—The clinical picture presented by a child suffering from severe scurvy is so characteristic that anyone conversant with the disease can usually recognise it at a glance. The child usually shows no emaciation and, in fact, is usually well supplied with subcutaneous fat. The face is pale and in the later stages has a peculiarly earthy tint. He may be lying quietly in his cot without any obvious discomfort, but if anyone approaches the cot he screams with apprehension and if moved in any way gives a peculiarly piercing shriek of pain. If the bedclothes are removed the attitude of the child is also characteristic. Although he may be screaming and furious at the medical man's approach he does not kick his legs about as a child in a temper naturally would, but the lower limbs lie quite still, everted, with the thighs abducted and the knees a little flexed. When the legs are gently handled there is very marked want of tone of both skin and muscles, as well as actual feebleness of the muscles. The bones of the limbs are tender and usually there are local swellings due to subperiosteal hæmorrhages, most frequent just above or below the knee. At the site of these swellings the tenderness is extremely acute and the skin is often tense and glossy. On handling the limb soft crepitus may be elicited, fracture having taken place at or near the epiphyseal line. The arms are as a rule less tender, but they may be the only site of hæmorrhage, which is most frequent near the upper end of the humerus. There is occasionally hæmorrhage from the periosteum lining the orbit, giving rise to proptosis and ecchymosis of the eyelids. An excellent coloured illustration of this condition is given by Cheadle in Allbutt's "System of Medicine."

Changes in the gums.—If no teeth have been erupted changes in the gums may be absent or limited to an ecchymosis over the site of the incisors. Similarly it has been noticed in scorbutic adults that the gums are not spongy at all if the patients are edentulous. When any teeth have been cut there are nearly always changes in the gums, although one or two cases have been recorded in which the gums were healthy. In very mild cases there may be merely slight swelling and hyperæmia, but in marked cases the hyperæmic gum becomes purple from extravasated blood and the edge of the gum swells up so that the teeth may be almost concealed in a dark fungating mass which bleeds at the least touch. The gums readily ulcerate and sloughs form which disengage a disgusting "carrion-like" odour. This condition of the gums was also a prominent condition in adult scurvy. Joinville, in his history of the Crusade under Louis IX. (in connexion with an outbreak of scurvy outside Alexandria), writes: "The barbers were obliged to cut away very large pieces of flesh from the gums to enable their patients to eat. It was pitiful to hear the cries and groans of those on whom the operation was being performed; they seemed like the cries of women in labour." The rapidity with which these spongy gums subside when the patient is placed on a proper diet is as striking as the recovery of the periosteal lesions.

Of other scorbutic symptoms epistaxis and hæmaturia are not uncommon and lead to increase of the anæmia, but are not usually severe. Petechiæ and subcutaneous echymoses, so common in adult scurvy, are only of occasional occurrence in the infantile form.

Mild cases.—You must not always expect to meet with the symptoms as fully developed in all cases, especially in the early stage. Cases occur, for instance, in which

[1] Transactions of the Pathological Society of London, vol. xxvii., 1876.
[2] THE LANCET, Nov. 16th, 1878, p. 685.
[3] THE LANCET, July 15th, 1882, p. 48.

the only symptoms are fretfulness and sponginess of the gums; in others, tenderness of the limbs on active or passive movement without any periosteal swellings, and occasionally hæmaturia may be the only symptom. I may mention three cases of this latter class. A well-developed boy, aged ten months, had had a diet consisting only of sterilised milk for four months. He then began to pass considerable quantity of blood in the urine and a diagnosis of renal sarcoma had been made. As soon as fresh milk and orange-juice were substituted for the sterilised milk the hæmaturia disappeared and the child has grown up perfectly healthy. In a second case a boy, aged 13 months, had been fed almost exclusively on a malted food. He had hæmaturia with practically no bone tenderness. He had his eight incisors and the gums over them were quite healthy but there was distinct sponginess over the site of the future first premolars. In the third child, aged eight months, there were hæmaturia and general tenderness without swelling. The blood was bright red. The child died suddenly from some unexplained reason the day after admission. The kidneys and bladder appeared healthy, but there was a submucous ecchymosis, probably scorbutic, in the membranous part of the urethra.

Association with rickets.—As would be expected, the dietetic errors which cause scurvy also predispose to rickets, so that the two conditions are often present together, but scurvy may be met with where there is no sign of rickets, just as rickets is often met with alone. In consequence of the frequent association of rickets there may be catarrhal troubles of the respiratory and alimentary tract due to the latter condition, but scurvy alone rarely causes any lung complications and except for the trouble in the gums scarcely ever sets up any disturbance in the alimentary canal. In fact, the appetite is usually large, although there may be some difficulty in administering food owing to the tenderness of the gums. And it is fortunate that the relish for food is so well preserved since when anti-scorbutic articles of food are given the large quantities which the child is willing to take materially hasten the cure. It will be noticed that the parts attacked by the disorder are those which are in a state of great functional activity at the time of life when scurvy appears—the epiphyseal region of the long bones and the gums in the neighbourhood of the recently cut teeth. There are two other positions in which bone lesions have been observed in a few cases. The ribs near the costo-chondral junction may be affected and there may be separation of the ribs from the cartilages. In a case mentioned by Barlow "the sternum, with the accompanying cartilages, seemed to have sunk bodily back as though it had been subjected to some violence which had fractured several ribs in front and driven them back." Another exceptional position is the cerebral dura mater, where large hæmatomata have been described by Sutherland[4] and others.

Morbid anatomy of the bone lesions.—If a vertical section is made through the femur in a well-marked case the following conditions are observed. 1. Hæmorrhage beneath the periosteum, raising it and leaving the shaft bare, sometimes over its whole extent. If the periosteum is examined microscopically it is found to be thickened and broken up by numerous hæmorrhages. There are, however, few signs of inflammation. As a rule no new bone is formed on this elevated periosteum and in the rare cases in which such formation occurs the new bone is soft and small in amount and the shaft rarely, if ever, necroses, as in cases of infective periostitis. 2. Although necrosis is not to be feared the nutrition of the shaft is interfered with and fractures are frequent. These are usually seen at the epiphyseal junction or a little way from it. Crepitus is soft, partly from the effused blood-clot. When fracture occurs at the lower end of the femur blood may fill the knee-joint. 3. There are changes in the internal structure of the bone—rapid rarefaction of the cancellous tissue of the bone and hæmorrhages into the centre of the shaft.

Diagnosis.—When the condition is well developed the diagnosis is usually easy, particularly when the gums are spongy, but in the early stage or in slight cases it is often difficult. But if there is any bone tenderness which cannot be accounted for it is always wise to anticipate any possible scorbutic developments by giving fresh, unsophisticated milk and some suitable vegetable food. The conditions with which it is most likely to be confounded are: 1. Periostitis. In scurvy the temperature is rarely high, 100° or 101° F. being usually the highest, and often it may be normal or subnormal. The pyrexia in periostitis in young children is usually severe. In many cases the spongy gums or the presence of similar swellings on other bones will make the diagnosis clear. 2. Syphilitic epiphysitis. Although the state of the limbs in the two conditions is often similar they attack children at different ages, the syphilitic cases being nearly always under six months of age, while scurvy is almost invariably met with after that age. Further, the nutrition of the syphilitic cases is usually poor, while the scorbutic cases are nearly always well supplied with fat. 3. Paraplegia or infantile paralysis. This is suggested by the immobility of the limbs as well as by the extremely soft and atonic condition of the muscles. As most of the children are rickety there is often a curvature in the dorso-lumbar region of the spine which may be mistaken for caries and so suggest that the child's refusal to move the limbs is due to pressure on the cord. The bone tenderness, the spongy gums, and other signs of scurvy quickly enable any paralytic cause to be set aside. 4. Ordinary ulcerative stomatitis. In scurvy the changes are confined to the gums and are not found on the tongue and cheeks, as in ulcerative stomatitis.

Treatment.—This consists solely in rectification of the diet. Fresh, unboiled milk must be given instead of sterilised milk, all desiccated infants' food must be given up, and fresh vegetable or animal food must be given. Owing to the good appetite of most of the patients it is usually easy to get them to take large quantities of food. In addition to fresh milk and cream, potato soup may be given. This may be made by cooking a small potato in its jacket, sieving it, and then pouring over it a breakfast-cupful of boiling milk and adding a little sugar if the child likes it sweet. If the child will not take potato soup some broth may be given in which a muslin bag of chopped-up potato, carrot, &c., has been suspended while the broth was being made. Raw meat juice may also be given. Four ounces of steak meat should be scraped or finely minced, placed in a saucer, and just covered with cold water in which a pinch of salt has been dissolved. After standing for half an hour the juice should be expressed through muslin. Orange or lemon juice suitably sweetened should also be given. The limbs should be placed between sand-bags to keep them from being moved or, in the case of the arm, the hand and forearm may be gently bandaged to the side. If the diet be rectified both pain and swelling almost instantly subside and sedatives are rarely required. Any treatment of accompanying rickets may be postponed. As Cheadle points out, cream at such a time is better than cod-liver oil and raw meat juice is better than iron.

So far we have been on firm ground of observation, but when we come to consider the etiology of scurvy we find that there are many gaps in our knowledge and that many of our conclusions must be regarded as provisional only. It is, however, certain that the disease is clinically and pathologically identical with scurvy in adults and that the most important, though probably not the only, factor is the absence of sufficient *fresh* animal or vegetable food from the diet. It may be well briefly to review the evidence of this in the case of adult scurvy which was such a scourge both on land and sea to our forefathers.

1. The most familiar proof is furnished from the history of scurvy occurring on board ship. When ships had been some time at sea and fresh vegetables were not procurable scurvy frequently broke out. The narratives of Columbus and the early explorers frequently tell of ships scarcely able to reach port because there were not enough hands free from scurvy to work the ship. Immediately, however, that they touched land and were able to procure abundance of fresh food even the worst cases quickly recovered. In both merchant ships and in the navy until recent times scurvy was terribly frequent until it was found that the juice of fruits would also prevent the occurrence of scurvy; but from the time that it was made compulsory for lime juice to be carried and for all hands to take a sufficient daily dose of it scurvy soon became a rare disease at sea. No doubt the disappearance of scurvy has been hastened by the employment of steam, so that vessels call at ports at shorter intervals and so do not run short of vegetables and fruit. Modern steamers also now have arrangements for storing large provisions of vegetables and meat in cold chambers.

2. It has been noticed again and again in the case of armies in the field that in winter, unless efficient commissariat arrangements were made for providing fresh vegetables, &c., scurvy would break out, but that the epidemic

[4] Brain, 1894, p. 27.

would subside when, on the advent of spring, fresh vegetables were once more procurable. Instances of this occurred during the Crusades, and the following instance which occurred in Chitral as lately as 1885 may be quoted. It was related by Lieutenant-Colonel H. Hamilton, I.M.S., in the *British Medical Journal* of Oct. 25th, 1902. "In the year 1885 I was in medical charge of the 23rd Pioneers in the Hurnai Pass. Knowing that no fresh vegetables would be procurable I had arranged that a native dealer should open a shop and get up supplies from India. One day a man came to hospital with an obscure swelling of the leg which suggested scurvy and I said, 'You have not been eating vegetables.' To this the man replied that there were none to be got; in short, the native dealer had found it so difficult to supply vegetables that he had given up the attempt. I then examined some of the sepoys and followers and found in nearly every case that the gums were showing signs of scurvy. Looking round the barren hill sides I found a little cruciferous plant. This I showed to a native officer who said he knew it well and it was rank poison. I said, 'That may be, but we officers are going to have a spinach made of it and we are going to eat it in the mess to-night.' On my return to camp the same native officer met me and said he had in the meantime boiled and made into spinach some of the plant and that it was very good. The result of my trial of it was that I had a regimental order published stating that this plant was good to eat and that anyone found with scurvy would be punished. During the rest of our stay there, which extended to several months, I sent out two men per company daily to collect herbs, which after inspection by me were cooked for the companies. The result of this was that we had no more scurvy."

3. During sieges, when the supply of fresh vegetables and animal food runs short, scurvy usually breaks out, as in the siege of Paris in 1870, where it was very prevalent. "In 1703, during the siege of Thorn, in Prussia, by the Swedes, which lasted only five months, 5000 of the garrison, besides a great number of the inhabitants, died of it. The besiegers were at the same time quite free from it" (Budd).

4. Scurvy is also frequent in northern latitudes where vegetation disappears during the severe winter and this has caused a heavy death-roll among Arctic explorers. But as Nansen has shown, the absence of fresh vegetables may be compensated for by taking an abundance of fresh meat. The Esquimaux, who are great meat-eaters, usually escape; and during his long journey towards the North Pole Nansen made his men eat large quantities of fresh meat and had not a single case of scurvy among members of his expedition. Another example showing the efficacy of fresh animal food is given by F. G. Jackson in "The Great Frozen Land," p. 99: "There were in all in this tiny monastery (at Habarova, North Siberia) six Russian monks and one lad who acted as their general servant. They belonged to the strictest sect of the Russian priesthood and were bound by their vows to abstain altogether from meat. This obligation did not apply to the lad who was kept busy and in constant exercise and lived on fresh reindeer meat. At the end of the second winter (in May) the Russian peasant traders and Samoyads came back from the Pechora to find all the six priests dead of scurvy and the boy of 12 in perfect health."

5. Land scurvy was endemic in many parts of England a few centuries ago, probably owing to the circumstance that "till the commencement of the sixteenth century no salads, carrots, or other edible roots were grown in England. The little of these vegetables that was used before that time was imported from Holland and Flanders and in the reign of Henry VIII. Queen Catherine, when she wanted a salad, was obliged to despatch a messenger thither on purpose" (Budd). Potatoes had not been introduced into England at the time when scurvy was prevalent. What is true of large masses of population has also been exemplified in individuals, and even in this country cases of scurvy are occasionally met with in adults and older children. In the case of the latter it is nearly always found that they are children who dislike fresh vegetables and have been allowed to go without them. I remember a woman being admitted into the ward with scurvy when I was a student. She lived in a garret and subsisted almost entirely on tea, stale bread, and kippers.

In all these cases, however, there has been not only deprivation of fresh food, but the food that they did get was probably greatly deteriorated in quality and this possible factor must be kept in mind. It is curious that in cases of starvation due to privation, to disease, or to fasting for public exhibition, scurvy, as Osler has remarked, is practically unknown.

Returning to infantile scurvy we find almost invariably that there has been absence of a sufficiency of fresh milk and in most cases the administration of preparations of milk in which the composition of the milk has undergone some more or less profound alteration. The anti-scorbutic properties of fresh milk are slight but sufficient. No case has yet been recorded in which a breast-fed child developed scurvy (except during epidemics when the mother was herself scorbutic) and it can also be avoided by keeping a child on a sufficiency of fresh cows' milk. When the actual feeding of a series of infantile scurvy is investigated two facts are at once evident: (1) that in none of them is the child taking a diet solely of fresh milk and (2) that the great majority are being fed on milk sterilised at high temperatures or on patent foods containing milk which has been desiccated. Both these propositions are so well established that I need not detain you by marshalling statistics in their support, merely pointing out that the chief factor in infantile, as in adult, scurvy is the absence of sufficient fresh "living" food and that if a proper amount of "living" food is administered scurvy can not only be prevented but, if present, can be cured. But there are one or two problems which still await solution in connexion with scurvy and I propose to touch on two of them.

1. How does fresh food prevent and cure scurvy? Is it owing to the presence of some definite body or bodies or is it through some property inherent in fresh food which we cannot at present define? The presence of some definite body is the most convenient supposition and it is spoken of as glibly as we speak of the hypothetical ether which is assumed to pervade the universe and there are many considerations which give it support. Most antiscorbutic plants are rich in potash and many of them in organic acids as well, as Sir Alfred B. Garrod showed half a century ago, and he was inclined to attribute scurvy to the absence of organic salts of potash in the food. And this seemed to be confirmed by the observations of Rulfe that in scurvy there was a marked diminution of the alkalinity of the blood. But the administration of organic or other salts of potash in cases of scurvy has been without any effect. Nor has research in any other direction for some definite antiscorbutic body at present proved successful and there are one or two considerations which are opposed to the view that there is a single antiscorbutic substance. Among these is the observation that some foods lose their antiscorbutic power when cooked, while others are unimpaired. The antiscorbutic powers of milk are lessened by boiling and destroyed by prolonged boiling as in sterilising and those of meat are impaired by cooking, raw meat-juice being far more effective in scurvy than beef-tea is. But potatoes and green vegetables seem to lose none of their virtue by being cooked. I am afraid that we cannot yet get beyond Barlow's position that "the problem is biological as well as chemical and that the further we get from a living food the less is its anti-scorbutic power."

2. Are there any positive factors in addition to the negative one which all admit? Many have been suggested and disproved. For instance, it was once maintained that congenital syphilis was often an exciting cause. This I am confident is erroneous. Rickets, again, has been held responsible. The frequency with which rickets is associated lends support to the view. But cases of infantile scurvy have been recorded in which there was no sign of rickets, so that scurvy is not a manifestation of rickets, although probably predisposed to by it. The frequency with which rickets is present in scorbutic infants is mainly due to the improper diet in each case. But we open a larger and more difficult question when we inquire whether there is not some positive morbific influence in connexion with the food the child has been taking. It is probable that there is such a factor, though much less important and less constant than the absence of fresh food, and that this is probably due to the presence of bodies developed by alterations in the composition of the proteids in the milk, the result of predigestion, sterilisation, or desiccation as the case may be. That there is such a factor is strongly suggested by the fact that infantile scurvy not infrequently occurs when children have been taking a fair quantity of fresh milk if they are taking at the same time one of the various patent dried foods or if the fresh milk has been pancreatised, and according to Cheadle scurvy is specially liable to develop where the patent foods have been partially predigested during their

manufacture. Out of 23 cases I have had the opportunity of investigating in no-pital and private practice 19 were taking some kind of patent food as their staple diet and no fewer than seven of these were taking fresh milk at the time. The other four had been fed on sterilised or "humanised" milk. In Cheadle's "Lectures on the Practice of Medicine"[3] he gives full details of the previous food of 60 cases of scurvy. Of these, 46 were taking various patent foods, mostly "malted," and of these 13 were taking milk, said to be fresh, with the food. Of the remaining 14, three were taking peptonised milk and seven sterilised or "humanised" milk. Cheadle, however, attributes the scurvy not to the direct influence of the dried foods but to the quantity of milk taken being insufficient to act as an antiscorbutic.

It must be admitted that the case is not yet proved, but I may refer to a further suggestive point. Among the cases of scurvy that I have seen there were three in which the condition had been recognised and fresh milk and raw meat-juice added to the diet but in which the patent food which the children had been taking was not stopped. As a result of this partial change of diet there was only slight improvement, but at the end of some days the gums were still spongy, the swellings had not gone down, and the pains were still severe. In each case the only alteration suggested in the treatment was the complete abandoning of preserved food of any kind. The improvement was then as rapid as it usually is in children admitted to hospital and at once placed on a "living" diet. I cannot pretend that we have any knowledge of what poison or poisons could be responsible, but in the case of predigestion of milk it is well known that the process must not be carried on long or toxic bitter substances will be formed, and it is quite a feasible notion that other bodies may be developed from the proteids of the milk by the various modes of preparation which may favour the occurrence of hæmorrhagic lesions. If we turn to adult scurvy we find that where scurvy is epidemic, as in sieges, long voyages, &c., the quality of the provisions obtainable had usually deteriorated—meat having become tainted, flour mouldy, and so forth. And it is probable, I venture to think, that products of decomposition (not necessarily offensive) are subordinate factors, the essential one in both children and adults being the absence of sufficient fresh vegetable and animal food.

ON THE ACTION OF HÆMOLYTIC SERA.

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IT has been abundantly shown by researches within recent years that the destruction of red corpuscles and bacteria by their respective anti-sera takes place according to practically the same laws. The phenomena can, however, be more readily and more exactly studied in the case of hæmolysis, owing to the visible effect produced by the action of the serum; the facts thus ascertained can then be tested in the case of anti-bacterial sera. The subject of hæmolytic sera is thus one of great practical importance. It is also one of the highest interest from the biological point of view, exemplifying, as it does, one of the most remarkable reactive powers which the animal body possesses.

It is unnecessary to give a historical survey of the subject, as this has recently been done in several excellent articles.[1] It will be advisable, however, to mention some of the fundamental facts established by the researches of Bordet, Ehrlich and Morgenroth, von Dungern, and others.

If an animal is injected with the red corpuscles of an animal of different species its serum acquires the power of dissolving such corpuscles and on repeated injections this hæmolytic power may attain a very high degree. (When a serum normally possesses a hæmolytic action this property, of course, becomes accentuated by the method indicated.) In the hæmolytic action two substances are concerned, one being the comparatively stable substance which gives the serum its special character—the *immune-body* of Ehrlich—and the other being a substance present in normal serum, highly sensitive to heat and other agencies—the *complement* of Ehrlich. As was first shown by von Dungern, the immune-body alone increases in amount during the stages of immunisation, the complement remaining practically unaffected. Accordingly, in testing a hæmolytic serum, its complement is first destroyed by heating at 55° C. and varying amounts of the heated serum are used along with a sufficiency of fresh serum of a normal animal to supply the necessary complement; otherwise the full hæmolytic value of the serum would not be obtained. The term "immune-body" will be used for convenience as indicating the hæmolytic serum deprived of its complement by heating and the term "complement" as indicating the fresh serum of a normal animal. As regards the mechanism of hæmolysis, there are two chief theories—that of Ehrlich and that of Bordet. According to the first, the immune-body possesses two chief combining groups, one by which it becomes combined with the red cells—the cytophile group—and another by which it fixes the complement—the complementophile group; hence, Ehrlich has called the immune-body an amboceptor. The immune-body has, however, little or no affinity for complement until it has become attached to the red corpuscle. According to Bordet the immune-body sensitises or has a mordant-like action on the red corpuscles whereby they become susceptible to the action of complement (hence he uses the term "*substance sensibilisatrice*") and complement (or "alexine," as he calls it) combines directly with the sensitised molecules. The following research was carried out in order to study more closely than had been done the combining relationships of immune-body and of complement, and especially to inquire into the possibility of dissociating these substances singly or together after they had combined. When I commenced my experiments there was practically nothing in literature on the latter subject, although certain results have since been published. The sera used in most of the experiments have been those of rabbits, immunised against the red corpuscles of the ox. The normal serum of the guinea pig has a distinct though slight hæmolytic action on the corpuscles of the ox owing to the presence of what we may call a natural immune-body (the *Zwischenkörper* of Ehrlich). This has little effect in the case of a single dose of complement but comes to be of importance when comparatively large amounts are employed. I have accordingly in all cases before using the complement placed the serum in contact with corpuscles of the ox at 0° C. for an hour, by which means all the natural immune-body becomes attached to the red corpuscles, while the complement remains in the serum, which is then separated again by centrifugalisation. I have used the corpuscles of 0·5 cubic centimetre of ox's blood (freed from serum) for each cubic centimetre of guinea-pig's serum and have found that 1·5 cubic centimetres of the serum thus treated have practically no effect on the test amount of the corpuscles of the ox. In testing the value of immune-body and complement I have used the methods of Ehrlich and von Dungern, the test amount of red corpuscles being one cubic centimetre of a 5 per cent. suspension of the corpuscles of the ox in 0·8 per cent. solution of chloride of sodium, the corpuscles being always freed from serum by repeated centrifugalisation and washing in salt solution.

Ehrlich and Morgenroth showed that red blood corpuscles might in certain instances take up many times the minimum hæmolytic dose of immune-body. This is of fundamental importance and, in fact, constitutes the basis of most of the experiments to be described. The immune body combines with certain molecules or receptors in the red corpuscles of the species of animal used; whether this is a true chemical combination or not need not be discussed at present. It will be convenient to use the letter R. as indicating the receptors which will take up the minimum hæmolytic dose (M. H. D.) of immune-body (I. B.); thus when two hæmolytic doses of the latter are taken up the combination will be represented by 2 R. + 2 I. B. I shall use the letter C. to represent complement; complete hæmolysis with minimum doses may then be conveniently represented by R. + I. B. + C.

Before speaking of the separation of immune-body after combination it will be convenient to refer to some facts regarding the union of immune-body and red corpuscles. This union, as Ehrlich and Morgenroth showed in their first

[3] Smith, Elder, and Co., 1900.

[1] I may mention Aschoff: Ehrlich's Seitenkettentheorie, Jena, 1902; Sachs: Die Haemolysine, Wiesbaden, 1901 (from Lubarsch and Ostertag's Ergebnisse der Allgemeinen Pathologie); Ritchie: Recent Views on Immunity, Journal of Hygiene, 1902; Welch's Huxley Lecture, THE LANCET, Oct. 11th, 1902 p. 977; and Grunbaum's Goulstonian Lectures, THE LANCET, March 21st, 1903, p. 775, &c.; and von Dungern: Die Antikörper, Jena, 1903.

communication, takes place at 0° C., and thus a method is afforded for separating immune-body from complement when they are present together in a fluid. (This method, as already indicated, has been utilised for obtaining guinea-pig's serum practically free from natural immune-body and thus devoid of hæmolytic action on ox's corpuscles.) The amount of immune-body taken up by red corpuscles is usually tested in the following way. A number of tubes, each containing one cubic centimetre of 5 per cent. suspension of ox's corpuscles, are prepared and to these increasing multiples of the hæmolytic dose of immune-body are added in series—i.e., two doses, three doses, &c. The tubes are then placed in the incubator for two hours at 37° C., the contents being shaken well from time to time so as to allow time for complete combination. All the tubes are then centrifugalised and the contents of each are added to a fresh tube containing one cubic centimetre of suspension of red corpuscles, along with sufficient complement for hæmolysis. In this way we ascertain the smallest number of doses of immune-body which give a free dose of immune-body uncombined after the above treatment. In the case of rabbit's immune-serum I have found that the number of doses taken up by ox's corpuscles varies from six to ten; it is usually seven or eight (variation seems to depend both upon the serum in question and also upon the corpuscles used in testing). But it is to be noted that the union of immune-body and red corpuscles is not like ordinary chemical union, say of an acid and a base. If, for example, eight hæmolytic doses of immune-body are the smallest amount which gives one free hæmolytic dose we do not find that all the immune-body in the tube containing seven doses has been taken up; on the contrary, in this tube there may be almost a dose free, in the six-dose tube a considerable amount, in the five-dose tube a trace, &c. And evidence is brought forward below, that when there is a great excess of immune-body present more is taken up than the maximum brought out by this method of testing. It is therefore evident that the amount of immune-body taken up varies to a certain extent with the amount present.

On Dissociation of Immune-Body from Red Corpuscles.

In examining the possibility of separating immune-body after combination I took advantage of the fact that the red corpuscles of the ox take up several doses of the immune-body of the rabbit. The method then is to bring red corpuscles saturated with immune-body into contact with untreated corpuscles for a certain length of time and then to observe how much hæmolysis takes place when sufficient complement is added to the mixture. The details are as follows:—

1. One cubic centimetre of 5 per cent. suspension of ox's corpuscles is treated with excess (20 doses) of immune-body from the rabbit, for an hour at 37° C. Two such tubes are prepared, A and B. 2. The corpuscles are then centrifugalised and washed several times in salt solution in order to remove all free immune-body. 3. One cubic centimetre of suspension of untreated red corpuscles is added to Tube A and the tube is centrifugalised, so as to bring the treated and untreated corpuscles into contact. This tube is placed in the incubator for an hour. 4. The contents of Tube A are then shaken up and 0·2 cubic centimetre of guinea-pig's complement is then added. At the same time one cubic centimetre of suspension of fresh corpuscles is added to Tube B and also at the same time 0·2 cubic centimetre of complement. Both tubes are placed in the incubator at 37° C.

The result is that hæmolysis of all the corpuscles takes place in Tube A, whilst in Tube B the added corpuscles remain practically intact. This result has been recently published by Morgenroth,[2] but I may state that I obtained it quite independently and demonstrated the fact to several friends last November. The only difference in the methods used is that Morgenroth simply mixed the treated and untreated corpuscles in suspension, whereas I brought them together by centrifugalisation. The transference of immune-body to the untreated corpuscles takes place rather more quickly by the latter method. I have found that red corpuscles treated with 12 hæmolytic doses of immune-body will usually give up two hæmolytic doses to fresh corpuscles after contact for an hour at 37° C.—i.e., two cubic centimetres of fresh corpuscles added, as in the above experiment, will undergo complete hæmolysis on the addition of sufficient complement—and that usually one dose of immune body can be obtained from red corpuscles containing six hæmolytic doses. Dissociation takes place, though much more slowly, at the temperature of the room, while at 0° C. it is practically *nil*.

The explanation of the above result is quite clear and has already been indicated. In Tube A the untreated corpuscles have obtained by dissociation a hæmolytic dose of immune body and the added complement is distributed over all. In Tube B the complement becomes fixed to the treated corpuscles before sufficient immune-body can pass to the untreated corpuscles; as a matter of fact, immune-body does pass over, but by the time this has occurred all the complement has been fixed. To explain the result in accordance with Ehrlich's theory as to the immune-body being an amboceptor, Morgenroth states that the combination of immune-body and red corpuscle becomes firmer when the former takes up complement—in other words, immune-body is locked up by complement. If this were not so we would expect immune-body and complement together to pass over to the untreated corpuscles. He, however, brings forward no direct evidence in support of this statement and, as will be shown below, it is possible to dissociate immune-body even when great excess of complement has been added. Experiments such as the above do not in themselves give any information as to the condition of immune-body after complement has been taken up. The question will be discussed again below.

On the Condition of Immune-Body after Hæmolysis.

Supposing that red corpuscles containing several hæmolytic doses of immune-body are hæmolysed by the minimum amount of complement, we have to inquire in what state the surplus molecules of immune-body are. There may be said to be three possibilities: (1) the surplus molecules of immune-body may be destroyed in the process of hæmolysis; (2) they may become free in the fluid; or (3) they may remain in union with the receptors of the red corpuscles. It is easy to show in the first place that they are not destroyed, as abundant immune-body can be obtained from the red fluid resulting from the hæmolytic action.

Example: 1. Red corpuscles (say one cubic centimetre suspension) are completely saturated with immune-body and after suitable time is allowed for combination they are centrifugalised and washed several times in salt solution. 2. Sufficient complement is added to produce complete hæmolysis. 3. One cubic centimetre of untreated corpuscles is then added to the red fluid and the mixture is placed in the incubator for an hour at 37° C. (No hæmolysis occurs because there is no free complement.) 4. The added corpuscles are then separated by centrifugalisation and washed in salt solution. On the addition of complement they undergo complete hæmolysis.

As mentioned above, *free* immune-body unites with red corpuscles at 0° C. We may accordingly test whether immune-body is recoverable from the red fluid at this temperature. The steps are the same as in the above experiment, only after hæmolysis has occurred at Stage 2 the tube is placed in a mixture of ice and water, the fresh corpuscles are then added, and the mixture is allowed to remain at 0° C. for an hour. Afterwards the tube is centrifugalised and the corpuscles are washed in cold salt solution. Complement is then added to the corpuscles and the tube is placed in the incubator. The result is that there is practically no lysis, though a control with red corpuscles added to fluid containing a dose of immune-body at 0° C. and then centrifugalised, gives complete hæmolysis on the addition of complement.

We may therefore conclude that when red corpuscles containing several doses of immune-body are hæmolysed by the minimum dose of complement, the surplus molecules of immune-body do not become free but remain attached to the receptors of the corpuscles; a certain amount can, however, be dissociated at the higher temperatures on the addition of fresh corpuscles.

On the Direct Union of Complement with Cells.

In some preliminary observations on the behaviour of complement I found that it united directly with various animal and vegetable cells, a fact which I afterwards found had been recorded by von Dungern[3] a considerable time previously. Of such cells may be mentioned those of the various organs of the same animal as that supplying the complement or of animals of different species, various bacteria, yeasts, &c. Von Dungern supposes that this combination takes place through the complementophile group of the amboceptors when they are still in position of side-chains in the cells. Whether this is the explanation or not need not be discussed at present; the important point is that molecules with direct affinity for the same complement are very widespread in the animal and vegetable kingdom. It is generally stated that red corpuscles, unlike other cells, have no affinity for complement, and it is the case that no

[2] Morgenroth: Münchener Medicinische Wochenschrift, 1903, No. 2.

[3] Von Dungern: Münchener Medicinische Wochenschrift, 1900, No. 20.

appreciable amount of complement is taken up by the amount of red corpuscles commonly used in hæmolytic experiments. If, however, the stromata be obtained from a large amount of blood and tested, it is easy to demonstrate that a considerable amount of complement enters into combination. I have obtained the stromata by shaking the blood with water, then adding sufficient chloride of sodium to make up to 0·8 per cent., and then centrifugalising and separating the sediment. This process is repeated several times and the stromata are obtained as an almost colourless viscous mass. I have used the stromata both after they have been freshly prepared and after they have been kept for some time in the dry condition. The following facts may be stated regarding this direct union of complement.

1. The combination is a firm one and I have been unable to recover the complement after it has been taken up. The test is made by washing in normal salt solution the cells, &c., which have taken up complement, to rid them of free complement, and then bringing them into intimate contact with red corpuscles treated with immune-body, the mixture being exposed for the usual time at 37° C. No hæmolysis occurs.

2. When the cells, &c., which have taken up complement are exposed to a temperature sufficient to destroy free complement—i.e., 55° C.—or rather sufficient to deprive complement of its characteristic property, the affinity for complement is not restored. This may be interpreted in accordance with Ehrlich's views on the constitution of complement, according to which it possesses a labile zymophorous group and a more stable haptophorous group. The action of heat destroys the zymophorous group though apparently not the haptophorous, as the injection of complement which has been heated to the temperature mentioned still possesses the power of giving rise to anti-complement when it is injected into an animal of different species from that which supplied the complement. The result which has been stated as to the effect of heating on the combined complement shows that the latter, when presumably it is altered by heat, is not displaced by normal complement. It may also be recalled in this connexion that Bordet[4] found that when anti-complement had combined with complement the affinity of the latter for complement was not restored by heating at 55° C.—a temperature which has no effect upon anti-complement. 3. The direct union of complement with cells, &c., takes place most rapidly about 37° C., whereas at 0° C. practically no combination occurs. This can be readily tested by the usual methods. In this respect the direct union of complement corresponds with the union through the intervention of immune body. The question as to the dissociation of complement after combination by means of immune-body, involves a study by special methods of the behaviour of complement during and after hæmolysis. I shall next consider this subject.

THE CONDITION OF COMPLEMENT AFTER HÆMOLYSIS.

There are two chief questions to be considered under this head—viz: (1) Can complement be dissociated after it has entered into combination through the medium of immune-body? and (2) In what amount relatively to the amount of immune-body in combination is it taken up? An answer to both questions is supplied by a series of experiments of similar kind.

As already shown the corpuscles of the ox take up several hæmolytic doses of the corresponding immune-body obtained from the rabbit and accordingly the amount of complement taken up by red corpuscles containing a multiple of doses of immune-body can be compared with the amount when there is a single dose. An amount of complement considerably in excess of that necessary for hæmolysis is added in the two instances and after an exposure for two hours in the incubator at 37° C. the fluid is tested for the presence of free complement by adding red corpuscles previously treated with immune-body. If the added corpuscles remain undissolved then it follows both that no complement is free and also that none can be dissociated. The following may be taken as an example:—

Red corpuscles of the ox, 5 per cent. in 8 per cent. NaCl solution. Immune-body from the rabbit injected with ox's corpuscles, **M. H. D.** = 0·0009 cubic centimetre. Complement of the guinea-pig, **M. H. D.** = 0·075 cubic centimetre.

TUBE A.	TUBE B.
1 cubic centimetre suspension of red corpuscles.	1 cubic centimetre suspension of red corpuscles.
0·01 cubic centimetre of I. B. (i.e., 11 D.)	0·0009 cubic centimetre of I. B. (i.e., 1 D.)
0·2 cubic centimetre of C.	0·2 cubic centimetre of C.

The tubes are placed in the incubator for two hours; complete hæmolysis occurs in both. To each is added 1 cubic centimetre of suspension of ox's corpuscles, previously treated with two minimum hæmolytic doses of immune-body and the tubes are placed in the incubator for another hour. The result is that complete hæmolysis of the added corpuscles takes place in Tube B, owing to free complement present, whilst in Tube A they are practically unaffected.

It is thus seen that the presence of multiple doses of immune-body leads to more complement being taken up than is the case when there is merely sufficient immune-body to produce hæmolysis. The same result is obtained if hæmolysis is first produced by the minimum of immune-body and complement, and then several doses of immune-body are added—more complement is afterwards taken up. Such an experiment also shows that the complement has entered into firm combination and is no longer recoverable. It may also be stated that the combination I.B.+C. can never be dissociated from the receptors of the red corpuscles. If, for example, to the fluid in Tube B in the preceding experiment untreated corpuscles are added no hæmolysis of these occurs. This procedure has been carried out with varying amounts of immune-body and at different temperatures; the result has always been the same—provided, of course, that there is in the first stage a sufficiency of red corpuscles and immune-body to bring into combination all the complement present. It is easy to show by such experiments as the above that several times the dose of complement necessary for complete hæmolysis may be used up if sufficient immune body is present. Or, to put the result in other words, if any hæmolysis of treated red corpuscles occurs when they are added to any mixture (red corpuscles, immune-body, and complement) such hæmolysis may be taken as an indication of the presence of *free* complement.[5]

We have now to consider the exact amount of complement taken up in relation to the amount of immune-body combined with the red corpuscles. The principle involved to determine this is sufficiently simple, though the actual procedure is somewhat troublesome; it is to add different multiples of the hæmolytic dose of immune-body to the standard amount of red corpuscles, then to add increasing amounts of complement, and after allowing sufficient time (two hours in the incubator) for complete combination, to test for the presence of free complement by means of red corpuscles treated with I. B. In this way there can be noted (1) at what point free complement first appears and also (2) at what point a full hæmolytic dose of free complement is present. The former is indicated by the added corpuscles undergoing some degree of lysis, the latter by their being completely dissolved. In treating the red corpuscles to be used for the test of free complement it is advisable not to use a great excess of immune-body, otherwise a certain amount may become associated and attached to the receptors of the hæmolysed corpuscles and thus increase the amount of complement apparently taken up by these. For this reason the red corpuscles used to indicate the presence of free complement have been treated with two hæmolytic doses of immune-body for an hour before being added. Morgenroth and Sachs[6] have studied the relations of the amount of complement necessary for complete hæmolysis along with varying doses of immune-body and have found that in the present combination (the corpuscles of the ox, the immune-body of the rabbit, and the complement of the guinea-pig) the minimum dose of complement which will suffice for complete hæmolysis is practically reached when two doses of immune-body are used.

The following are the stages of such experiments.

1. The minimum hæmolytic dose of the I. B. and the C. to be used are determined. As these have to be determined just before the experiment the minimum amount which gives a perfectly clear fluid after one and a half hours at 37° C. is taken as the M. H. D. In certain cases it is also necessary to determine the number of doses of I. B. which can be taken up by the red corpuscles. 2. A series of tubes (say from nine to 12), each containing one cubic centimetre of red corpuscles, are taken, and to each tube 1 **M. H. D.** of I. B. is added. To these tubes varying amounts of C. are added, starting with the **M. H. D.** of C. (if the latter is 0·02 cubic centimetre then we add in series, 0·03, 0·04, 0·05, &c.) 3. The tubes are then well shaken and placed in the incubator for two hours, being also shaken from time to time during that period. Hæmolysis of course occurs. 4. To each tube one cubic centimetre of red corpuscles previously treated with two doses of I. B. is added. The contents are well shaken and the tubes are placed in the incubator for another hour. They are then placed in a cool place till the next morning.

In estimating the amount of hæmolysis in the added corpuscles, I have found it convenient to remove all the supernatant fluid and then to add to each tube one cubic centimetre of distilled water. The

[4] Bordet: Annales de l'Institut Pasteur, 1900, p. 256.

[5] The firmness of this union of complement is recognised by Bordet in his last paper, Annales de l'Institut Pasteur, April, 1903.

[6] Morgenroth and Sachs: Berliner Klinische Wochenschrift, 1902, No. 35.

depth of colour in the resulting clear fluid then indicates the amount of corpuscles which had remained undissolved, and the first tube in which this diminishes is taken as the point at which free complement first appears. Other series of tubes with multiple doses are prepared in a similar way.

Of a large number of experiments of this kind performed the following may be cited as examples. For convenience only six tubes which give the required result are quoted, though, as a rule, more were used.

1.—M. H. D. of I. B. = 0·0014 cubic centimetre.
M. H. D. of C. = 0·0475 cubic centimetre.
(D = M.H.D.)

I. B.	1·5 D.	1·5 D.	1·5 D.	1·5 D.	1·5 D.	1·5 D.
C. in cubic centimetres ...	0·08	0·09	0·1	0·11	0·12	0·13
Lysis	None.	Slight.	Distinct.	Marked.	Almost complete.	Complete.
I. B.	3 D.	3 D.	3 D.	3 D.	3 D.	3 D.
C. in cubic centimetres ...	0·16	0·18	0·2	0·22	0·24	0·26
Lysis	None.	Distinct.	Marked.	Complete.	Complete.	Complete.

NOTE.—"Lysis" indicates the amount of solution which fresh corpuscles treated with I. B. undergo when added to the mixture of the stated amounts of C., I. B., and one cubic centimetre suspension of red corpuscles, this mixture having been in the incubator for two hours. In the above, 1·5 D. of I. B. take up 0·08 cubic centimetre of C. completely and a free dose of C. is present when 0·13 cubic centimetre of C. has been added; 3 D. of I. B. take up 0·16 cubic centimetres of C. completely.

2.—M. H. D. of I. B. = 0·0075 cubic centimetre.
M. H. D. of C. = 0·022 cubic centimetre.

I. B.	1 D.	1 D.	1 D.	1 D.	1 D.	1 D.
C. in cubic centimetres ...	0·025	0·03	003·5	0·045	0·05	0·06
Lysis	None.	Trace.	Marked.	Complete.	Complete.	Complete.
I. B.	5 D.	5 D.	5 D.	5 D.	5 D.	5 D.
C. in cubic centimetres ...	0·1	0·12	0·14	0·16	0·18	0·2
Lysis	None.	Slight.	Complete.	Complete.	Complete.	Complete.

3.—M. H. D. of I. B. = 0·001 cubic centimetre.
M. H. D. of C. = about 0·015 cubic centimetre probably 0·017 cubic centimetre.
(It is used diluted twice with salt solution.)

I. B.	1 D.	1 D.	1 D.	1 D.	1 D.	1 D.
C. in cubic centimetres ...	0·03	0·04	0·05	0·06	0·07	0·08
Lysis	None.	Trace.	Distinct.	Marked.	Complete.	Complete.
I. B.	7 D.	7 D.	7 D.	7 D.	7 D.	7 D.
C. in cubic centimetres ...	0·175	0·2	0·225	0·25	0·275	0·3
Lysis	None.	None.	Slight trace.	Almost complete.	Complete.	Complete.

In this case not quite seven times the amount of C. are taken up by means of 7 D. of I. B., but it was found that when 7 D. of I. B were added to red corpuscles and time was allowed for combination nearly 1 D. remained in the fluid.

The eneral conclusion from such experiments is that *each dose of immune-body taken up by the receptors of the red corpuscles leads to the taking up of an additional and corresponding amount of complement.* In the instances given the amount of C. taken up by means of one dose of I. B. corresponds pretty closely with the M. H. D. of C. This is, however, not always the case, as in a considerable number of experiments 1 D. of I. B. took up considerably more than 1 D. of C.; I am unable to explain this divergence of result. But the important point is that whatever amount of C. was taken up through 1 D. of I. B. the amount taken up by 2 D., 3 D., &c., was twice, thrice, &c., as much. It also comes out from a study of the various series of tubes that up to a certain point no complement whatever is recoverable, then free complement appears, and then on the addition of 1 D. of C. more, this amount remains free. The affinity of C. for the combination R. + I. B. is manifestly very great and up to the limits mentioned it is possible to obtain, so far as C. is concerned, what is practically a neutral mixture. In this respect we have a marked difference from what obtains in the case of the union of immune-body with receptors of the red corpuscles. When, however, we take the case of red corpuscles *saturated* with I. B. we get a somewhat different result as to the manner in which C. is taken up. (*Vide infra.*)

We may now inquire as to the maximum amount of complement which can be taken up by corpuscles fully saturated with immune-body. Suppose that we find, for example, that when eight doses of immune-body are added to red corpuscles and time is allowed for combination seven are taken up, one remaining free (the corpuscles being thus apparently saturated); the question is, will corpuscles treated with *great excess* of immune-body take up seven doses of complement or will they take up more? The following is an illustrative example:—

M. H. D. of I. B. = 0·0014 cubic centimetre.
M. H. D. of C. = 0·0475 cubic centimetre.

The amount of C. taken up by 1·5 D. of I. B. is tested as above:—

I. B.	1·5 D.	1·5 D.	1·5 D.	1·5 D.	1·5 D.	1·5 D.
C. in cubic centimetres ...	0·08	0·09	0·1	0·11	0·12	0·14
Lysis	None.	Slight.	Distinct.	Marked.	Almost complete.	Complete.

This gives 0·08 cubic centimetre of C. taken up completely by 1·5 D. of I. B.—i.e., 0·053 cubic centimetre, per D.

Two series of 12 tubes, each containing (for convenience) 0·5 cubic centimetre of suspension of red corpuscles, are prepared and all are saturated with I. B., 30 doses being used. In one set the excess of I. B. is removed by centrifugalisation and washing; in the other set the excess of I. B. is left in the tubes. To the several tubes complement is added in the following amounts in cubic centimetres: 0·175, 0·2, 0·225, 0·25, 0·275, 0·3, 0·325, 0·35, 0·4, 0·45, 0·5, and 0·55. After two hours' exposure at 37° C., 0·5 cubic centimetre of corpuscles treated with I. B. is added to each tube and the tubes are placed in the incubator. (It may be remarked that, of course, this procedure was carried out at the same time as the 1·5 D. tubes were treated.) The result in the second series is that up to the tube containing 0·25 cubic centimetre of C. there is no trace of lysis, in the tube containing 0·275 cubic centimetre there is a mere trace; in the tube containing 0·35 cubic centimetre and above there is complete lysis, whilst in the tubes containing 0·275, 0·3, and 0·325 cubic centimetre respectively there is a gradually increasing amount. We are safe in assuming that 0·26 cubic centimetre of C. is completely taken up—i.e., 0·52 with tubes containing one cubic centimetre of red corpuscles. This is 9·8 times the amount of C. taken up by 1 D. of I. B. On the other hand, if we calculate from the tube in which there is first one complete dose of C. over we get about 12 times the unit of C. taken up. In the tubes from which the free I. B. had been removed by centrifugalisation the amount of C. taken up was very slightly less than in the second series.

It was found at the same time that ten doses of I. B. added to the standard amount of red corpuscles gave one free dose, after time was allowed for complete combination—i.e., 9 D. were taken up. In another experiment 8·5 times the amount of C. taken up through 1 D. of I. B. were taken up by the saturated corpuscles; while 9 D. of I. B. gave 1 D. over when tested in the usual way—i.e., 8 D. were taken up.

All the experiments of this kind go to show that if we calculate the amount of I. B., which can unite with red corpuscles from the tube which gives one free dose over, the total amount of C. which can be taken up by corpuscles saturated with I. B. is greater than this figure would indicate. This is probably to be explained on the supposition that even when a tube gives 1 D. of I. B. free it is not completely saturated but still takes up more I. B. when there is a greater amount of free I. B. In other words, the amount of I. B. which combines with a given quantity of red corpuscles is not an exact quantity but varies somewhat with the amount of I. B. present—i.e., we have not union according to simple chemical laws. As stated above, when 5 D. of I. B. are added to red corpuscles a certain amount remains free; this free I. B., however, in some way leads to the taking up of C. as the total amount of C. taken up is rather less when the free I. B is removed. In the case of the tubes saturated with I. B, the great difference between the amount of C. which first gives some free C. over and that which gives a complete dose over, is noteworthy and forms a contrast to what was obtained in the case of the definite multiples recorded above.

The combination or using up of complement in excess of what is necessary to produce the required result (hæmolysis) will probably be found to hold also in the case of antibacterial serum. The results stated, in fact, point to a way in which *complement may be wasted through excess of immune-body;* manifestly, the best result will be obtained when all the bacteria receive a single bacteriolytic dose of immune-body.

ON THE SEPARATION OF IMMUNE-BODY AFTER SATURATION WITH COMPLEMENT

If immune-body forms, as Ehrlich believes, a link between the receptor of the red corpuscle and complement, then,

seeing that complement is not separable (nor I. B. + C.), the saturation with complement should lead to the locking-up of the immune-body molecules so that they can no longer be separated. Various experiments have been carried out in order to test whether this is the case. We may first take the case of red corpuscles which have been saturated with immune-body, the excess of immune-body having been completely removed by repeated centrifugalisation and washing. Suppose that the number of hæmolytic doses taken up is nine, then complete saturation will be represented by 9 R. + 9 I. B. + 9 C. If then we add another dose of C. we would expect to get free complement but no immune-body. This, however, is not the case. The following may be taken as an example.

1. Four tubes, A, B, C, D, each containing one cubic centimetre suspension of red corpuscles, are taken, and to each more than sufficient I. B. is added to saturate the corpuscles completely. The tubes are placed in the incubator for one and a half hours at 37° C. and then allowed to remain at the room temperature for another half hour. 2. They are then centrifugalised and washed with fresh salt solution, the process being repeated several times. 3. Complement is added—to A, 0·015 cubic centimetre; to B, 0·06 cubic centimetre; to C, 0·1 cubic centimetre; and to D, 0·2 cubic centimetre (M. H. D. of C. is 0·013 cubic centimetre). The tubes are placed in the incubator for two hours. Complete hæmolysis of course occurs in all. 4. One cubic centimetre of 5 per cent. suspension of untreated red corpuscles is added to each and the tubes are placed in the incubator again for another hour.

The result is that the added corpuscles dissolve completely in D, while they remain intact in A, B, and C (there is possibly the slightest trace of hæmolysis in C). The corpuscles in the tubes A, B, and C are centrifugalised and washed in salt solution; 0·03 cubic centimetre of complement is added to each tube and the tubes are placed in the incubator. Complete hæmolysis then occurs in each tube. The explanation of this result manifestly is that in all the tubes sufficient immune-body was dissociated for complete hæmolysis, but that only in tube D was there a hæmolytic dose of free complement.

Objection might be made to using red corpuscles *saturated* with immune-body as some of the molecules might not have taken up complement. I have therefore compared the amounts of immune-body which can be dissociated from red corpuscles containing various doses of immune-body (1) before complement is added and (2) after complement is added. The following are the details. Nine tubes, each containing 0·5 cubic centimetre of 5 per cent. suspension of red corpuscles: to the first, two doses of immune-body are added; to the second, three doses; to the third, four doses; and so on up to ten doses. Two series of tubes, A and B, are thus prepared. If we take the 7 D. tube as an example, then in series A we have to find how much I. B. can be dissociated from 7 (R + I. B) and in Series B from 7 (R + I. B. + C.) + free C. Time is allowed for combination of immune-body and the corpuscles in each tube are then repeatedly centrifugalised and washed in salt solution. All the immune-body present is therefore in combination.

Series A.—To each tube after being treated as above is added 0·5 cubic centimetre of fresh corpuscles (5 per cent.); the tubes are shaken thoroughly, and then centrifugalised so as to bring the treated and untreated corpuscles into contact. They are then placed in the incubator for an hour at 37° C. so as to allow dissociation to occur. The contents are then thoroughly shaken up and to each tube is added four hæmolytic doses of complement. The tubes are then placed in the incubator for an hour at 37° C. and the result is observed next day.

Series B.—To each tube complement is added in excess—i.e., much more than will be taken up by the treated corpuscles. To the tube with two doses of I. B., 0·2 cubic centimetre of C.; with three doses of I. B., 0·3 cubic centimetre of C.; and so on in increasing amount. The tubes are placed in the incubator for two hours so as to allow the maximum amount of complement to be taken up. To each tube is then added 0·5 cubic centimetre of untreated red corpuscles (5 per cent. suspension) and the tubes are placed in the incubator for another hour. (During this time immune-body which can pass from the treated to the untreated corpuscles will do so, and, as there is plenty of free complement present, the latter will become hæmolysed in proportion to the amount of immune-body dissociated.) The tubes are placed in a cool chamber and the result is noted on the next day.

The following are the results obtained. The amount of hæmolysis of the added corpuscles in the two series practically corresponds. In the tubes containing originally from ten down to six doses (10 to 6 D.) of I. B. the added corpuscles have undergone complete lysis; in the tubes containing 5 D. almost complete lysis; in the tubes containing 4 D. distinct lysis; in the tubes containing 3 D. very slight lysis; and in the tubes containing 2 D. no appreciable lysis. It may therefore be concluded that from corpuscles combined with immune-body practically as much immune-body can be dissociated after complete saturation with complement as before any complement has been added.

We may also compare the amount of immune-body dissociated from red corpuscles containing *n* multiple doses of immune-body under the two conditions: (*a*) when just enough complement to produce hæmolysis has been added and (*b*) after complete saturation with complement. If we take again the case where seven doses of immune-body have been added, then the two conditions to be compared may be represented as (*a*) (R + I. B. + C.) + 6 (R. + I. B.) and (*b*) 7 (R. + I. B. + C.) + free C. In both cases there is, of course, complete hæmolysis, but in the former case most of the I. B is simply attached to the receptors of the red corpuscles, whereas in the latter all the affinities for complement have presumably been satisfied. The following are the details:—

Two series of nine tubes, each containing 0·5 cubic centimetre of red corpuscles, are prepared as before, and to the several tubes 2 D., 3 D., up to 10 D. of I.B. are added. Time is allowed for combination of I. B. and the corpuscles are centrifugalised and washed several times.

Series A.—Hæmolysis is produced by 0·03 cubic centimetre of complement, and after the tubes have been an hour in the incubator (and complete hæmolysis has occurred) there is added 0·5 cubic centimetre of red corpuscles (5 per cent.) to each tube. The tubes are then placed in the incubator for an hour to allow of dissociation of I. B. We then add sufficient complement—say, 0·2 cubic centimetre—which will produce hæmolysis in the added corpuscles, according to the amount of I. B. which they have taken up. The tubes are placed in the incubator for an hour at 37° C. and the result is observed next day.

Series B.—As in the previous experiment (*vide supra*, Series B) much more complement is added than the treated corpuscles will take up and an exposure for two hours at 37° C. is allowed for combination. To each tube the standard amount of red corpuscles is added and the tubes are placed in the incubator for an hour, &c.

The result is that here also there is no perceptible difference between the two series. In the tubes from 8 D. to 10 D. there is complete lysis of the added corpuscles, in tube 7 D. almost complete lysis, in tube 6 D. much lysis, in tube 5 D. distinct lysis, in tube 4 D. a mere trace, and in tube 3 D. no perceptible lysis. In another experiment of the same kind one or two of the tubes in Series A showed slightly more lysis than in Series B but the difference was of quite a trifling nature. Here, again, the experiments described supply no indication of the locking up of the molecules of immune-body by the complement molecules. (It will be noted that in all these comparative experiments the time allowed for dissociation of I. B. and for its combination with the added corpuscles is one hour at 37° C. and subsequently about 15 hours at cool room temperature.)

Although, as stated above, I have found no evidence that the combination I. B. + C. ever becomes dissociated the objection might be made that in the experiments just described this may possibly occur. This objection can, however, be met by showing in a direct manner that the I. B. separates alone—i.e., without complement attached to it. The method is to super-saturate with complement a given amount of red corpuscles combined with immune-body, then to remove the excess of complement present, and then to add fresh corpuscles and observe whether I. B. or I. B. + C. becomes dissociated. Bordet showed that an emulsion of a given bacterium, along with the corresponding anti-serum, can take up considerable quantities of hæmolytic complement, and for this purpose I have used the spirillium Mechnikovi along with its immune-body (heated homologous serum). The following are the details of such an experiment:—

1. Two cubic centimetres of 5 per cent. suspension of ox's corpuscles are saturated with I. B. and the corpuscles are then centrifugalised and washed several times so as to remove all free I. B. 2. 1·5 cubic centimetres of guinea-pig's complement are added and the mixture is placed in the incubator for two hours so as to allow complete combination of complement (hæmolysis of course occurs). 3. The red fluid is divided into two equal parts—A and B. 4. To A is added one cubic centimetre of red corpuscles treated previously with I. B. and the mixture is placed in the incubator. The result is complete hæmolysis. Therefore free C. is present in the fluid at Stage 3. 5. To B is added 0·3 cubic centimetre of a fairly thick emulsion of Metchnikoff's spirillum and 0·2 cubic centimetre of the homologous serum: the mixture is placed in the incubator for an hour. (This is in order to remove free complement.) 6. One cubic centimetre of emulsion of untreated red corpuscles is added to the fluid and allowed to remain for an hour. The red corpuscles remain intact, therefore the free C. has been removed. 7. The corpuscles are then separated by centrifugalising and washed in salt solution and 0·1 cubic centimetre of complement is added. The result is that complete hæmolysis occurs. This shows that the fresh corpuscles obtained I. B. *alone*, otherwise they would have dissolved at Stage 6.

I have repeated this experiment with corpuscles combined with five doses of immune-body instead of being saturated. In this case the fresh corpuscles added at Stage 6 obtain almost a complete hæmolytic dose of immune-body. It is thus completely proved that the immune-body dissociated

after complete saturation with complement comes off as I. B. alone and not in the combination I. B. + C.

Before considering the significance of the results obtained, it may be well to recapitulate the chief facts brought forward. These are: (1) each additional dose of immune-body taken up by the red corpuscles leads to the taking up of an additional and corresponding amount of complement (we may therefore infer that when red corpuscles containing 5 D. of I. B. are exposed to excess of complement, the I. B. molecules would really, according to Ehrlich's theory, become saturated with complement); (2) when such saturation has occurred I. B. is still separable; and (3) the I. B. is separated without C attached to it.

The question is, what has become of the C. which was taken up through the medium of the I. B.? The natural assumption is that it has become united *directly* to the molecules of the red corpuscles. Certain other points will require to be settled before this is definitely affirmed, but it must be admitted that the above results—all of which have been confirmed—are oppo-ed to Ehrlich's view as to the immune-body being a connecting link between complement and tissue molecules. The undoubted fact is that two substances in combination (tissue molecules + immune-body) take up an amount of complement which neither by itself will take up, and so far as I can see the above results cannot be reconciled with the view that complement becomes united to a complementophile group of the immune-body. Nevertheless I am fully aware that many other points will require to be cleared up before we gain a final conclusion regarding the relationships of these substances. It will, for example, have to be considered whether the facts brought forward by Neisser and Wechsberg[7] as to excess of immune-body interfering with the bactericidal action of complement can only be explained on the supposition that immune-body unites directly with complement.

SUMMARY OF CHIEF RESULTS.

1. Immune-body and complement differ markedly from each other in their mode of combination and in the firmness of union.

2. Immune-body can be in part separated before hæmolysis from red corpuscles containing multiple doses.

3. When red corpuscles containing multiple doses of immune-body are hæmolysed by the minimum dose of complement the surplus molecules of immune-body remain attached to the receptors of the red corpuscles and can be in part separated.

4. Complement after its union either directly with cells or indirectly through the medium of an immune-body cannot be separated again.

5. Each dose of immune-body taken up by red corpuscles in addition to the minimum hæmolytic dose leads to the taking up of an additional and corresponding amount of complement. In this way many times the amount of complement necessary for hæmolysis may be used up.

6. When red corpuscles containing multiple doses of immune-body are fully saturated with complement, immune-body can still be separated. The immune-body thus obtained comes off alone and not in the combination I. B. + C.

A portion of the work was done in the Pathological Department of the University of Oxford and I have pleasure in expressing my indebtedness and thanks to Dr. J. Ritchie for the excellent facilities there afforded me.

Glasgow.

A PROBLEM IN MEDICO-LEGAL PSYCHOLOGY.

BY J. S. MACKINTOSH, M.R.C.S. ENG., L.R.C.P. LOND.

THE Rev. ——, aged 34 years, when engaged one morning in making arrangements for a "treat" in connexion with his parish had occasion to make some short journeys on his bicycle to expedite matters. After the last of these bicycle runs he went up to his bedroom and was found not long after by his maid dead on the floor, with a wound in the head behind and a little above the ear, and a revolver on the floor beside him. The wound in the head was clearly self-inflicted. From the maid I learnt that the revolver was kept in the collar-and-cuff drawer (a point of importance in the case) as a protection from burglars. His wife was away for the night, having gone on a visit to her father on the previous day—a frequent occurrence. She was expected back every moment. The maid had not noticed any change that day in her master's demeanour, he seemed in excellent spirits, and she could not account in any way for her master taking his life. On proceeding with my examination I observed that a large piece of skin had been torn from the hypothenar eminence of the right hand as though by a fall. Being already aware that the deceased had been riding a bicycle that morning it occurred to me that he might have had an accident and seeking for confirmation I found hanging over the end of the bed a clergyman's cycling suit covered with mud all down the right side, a hole being torn in the knee. Correspondingly I found a large abrasion over the patella and a slight bruise on the right frontal region. It now became plain that the unfortunate man had had a bad fall from his bicycle, had gone home to change his clothes, and that during the process he had gone to his drawer, taken out the revolver, loaded it (for it was always kept unloaded and the box of cartridges was by his side), and shot himself.

Further examination showed that his toilette was complete except for his collar and cuffs. It was therefore a legitimate inference that he had gone to the drawer not for the revolver but for his linen, and that had the weapon been kept elsewhere the tragedy would in all probability not have occurred. The evidence given at the inquest and the result of my own inquiries both went to show that there was no reason discoverable that could have prompted him to contemplate self-destruction. His married life was most happy, his relations with his vicar were most cordial, and his finances were in order. He had no particular worries or troubles, as far as his friends and relatives knew; at no time had he shown a tendency to fits of depression; his family history was unsuggestive and no written word was left that could hint any reason for the act or even express intention. A witness of the fall was discovered. He saw the bicycle skid and the rider fall heavily on his right side, apparently striking his head. He tried to remount but, according to the witness, seemed unable to get into the saddle and desisting in the attempt proceeded to push his bicycle homewards.

From the foregoing facts I felt justified in drawing the following conclusions which I presented to the court in my evidence at the inquest. The effect of the fall was to induce that form of cerebral concussion which permits the sufferer to perform various complex and apparently reasoned acts of which he will retain no recollection when he has recovered from the effects of his concussion and which may be quite at variance with his usual behaviour, the mental condition being identical with that of the somnambulist, of the epileptic shortly after a fit, and of a certain phase of the hypnotic state. It was clear that the act was performed absolutely without premeditation from the evidence already given and from the fact that it was not until he had put on all but his collar and cuffs and had to go to the drawer where they were kept that he came across the revolver and made use of it. The sight of the revolver, its image impinging on the retina, started the ideo-motor sequence which ended in his loading the weapon, placing it to his head, and pulling the trigger, the act being automatic and not voluntary even as a sudden impulse, the deceased not being in reality conscious at the time.

Dr. J. F. Woodroffe of Harlesden, who had known the deceased for some years and had treated him professionally, gave evidence in support of my conclusions. He had arrived on the scene later in the morning after I had left and on examination and inquiry come to practically the same views quite independently of suggestions on my part. The coroner's court accepted the aspect of the case as presented by the medical witnesses and brought in a verdict in accordance therewith.

One question remains to be answered, Why on finding the pistol before him did he load it and put it to his own head? To find the reply the experienced psychologist will ask whether anything had come recently within the range of the mental experience of the deceased to suggest the act? There was this. Earlier in the week a report appeared in the papers of a clergyman shooting himself through the head in a similar manner. Though the deceased made no comment on it to his wife or to anyone it is improbable that it escaped his notice and, being

[7] Neisser and Wechsberg: Münchener Medicinische Wochenschrift, 1901, No. 18.

in holy orders himself, he would not fail to be impressed by it. The record of an impression of this kind would complete the chain of inference. As it is we must be content with a surmise only, but a justifiable surmise. I would submit that a case of this kind is carefully to be distinguished from those sudden impulses which induce a man to throw himself from a high building or to jump into the water. In this form of self-destruction the restraining impulse from the "conscious" area of the cortex is overcome just as an incompetent driver is overcome by an ill-broken horse. In the present case there is no question of incompetence to restrain an impulse. The driver is absent, the horse is a runaway, and follows to the end a path down which its driver once led it for a short distance, merely intending to view the course taken by another to destruction.

Hampstead.

A RARE CASE OF INTESTINAL OBSTRUCTION RESULTING FROM A KICK IN THE RIGHT ILIAC REGION.

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AND
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A STABLE-LAD, aged 17 years, was kicked in the abdomen by a horse on Oct. 8th, 1902. Three hours later Mr. Brown was called to see him. Mr. Brown gives the history of the case as follows.

I found him lying on his back with his knees drawn up, obviously in great pain and in a collapsed condition. Physical examination revealed superficial bruising in the right iliac region extending to the umbilicus. Both recti muscles were rigid and there was tenderness on palpation over the seat of the injury but no dulness to percussion. In the left iliac region there was a patch of dulness of the size of the hand. Respiration was quick and shallow and the temperature was 98·5° F. Inquiry into his previous history gave evidence of an attack of enteric fever two years previously. A catheter was passed and four ounces of normal urine were withdrawn. The patient was put to bed in a cottage, it being thought too risky to remove him immediately to a hospital. Hot fomentations were applied to his abdomen. Four hours later there were more pain and more abdominal distension. The patient was so restless that one-eighth of a grain of sulphate of morphia was given hypodermically. During the following night there was some vomiting, the vomitus being gastric. On Oct. 9th the patient's temperature was 101°, his pulse was 100, and respirations were 24 per minute. The abdomen did not move with respiration and was hyperæsthetic and markedly rigid. The vomiting had ceased but the bowels had not been opened. The patient was very restless all day and at night another dose of morphia was given. No more morphia was given, but for four days the bowels were not moved. On the 12th one-sixtieth of a grain of sulphate of strychnine was given hypodermically and the bowels acted freely and continued to do so for some days. On the seventh day (the 15th) the abdomen was only tender over the injured region, where there were some resistance on pressure and comparative dulness on percussion. The left-sided dulness had disappeared. Meteorism was present and at the end of the first week became very distressing, displacing the thoracic viscera, the heart's apex being in the third interspace internal to the nipple. Strychnine was again given with the result that the bowels were freely relieved, the meteorism was much lessened, and the apex beat came down into the fourth interspace. The patient was able to take and to retain nourishment. His general condition remained fairly satisfactory up to the sixteenth day after the accident. The temperature ranged from 99° to 101° and the meteorism was a troublesome symptom. After this the bowels became less and less active and the meteorism consequently increased. Strychnine failed to relieve these symptoms and purges produced only slight actions of the bowels. The temperature took a higher range (101° to 103°). The symptoms now became progressively worse, meteorism was intense, and the bowels became absolutely obstructed even to the passage of flatus. Vomiting set in. Immediate operation being considered imperative I called in my colleague Dr. Kempe of Salisbury. He concurred as to the necessity of operating and when the boy was anæsthetised a median incision below the umbilicus was made and the abdomen was opened. A hurried examination of the contents showed recent general plastic peritonitis, the coils of intestine being firmly bound together and to the parietes with white lymph, especially in the pelvis and right iliac region. There was no free fluid or any collection of pus. The lad's condition being extremely bad it was decided to relieve him temporarily by an enterotomy. Accordingly a distended piece of gut was opened and a Paul's tube was inserted. A large quantity of gas and liquid fæcal matter was discharged. After the operation the patient was manifestly better, the abdomen became flat instead of barrel-shaped, and the apex beat came down into the fourth interspace. The temperature never rose above 99° and there was free discharge of liquid fæces through the enterotomy wound, from which the tube was removed on the third day. For the first four days the patient was fed upon peptonised milk by the mouth and by peptonised nutrient enemata. The latter were not retained after the third day and were discontinued, soft solid food being then well borne. On the eleventh day after the operation the patient was removed to the Salisbury Infirmary under the care of Dr. Kempe with a view to further operation.

On Nov. 8th, the day after his admission to the Salisbury Infirmary, his condition was as follows. The patient was pale and very thin but felt comfortable and had no pain except from the excoriated skin around the fæcal fistula. Just below the umbilicus for about two inches was a granulating wound, in the centre of which was a fæcal fistula. The skin around was excoriated and raw. Nothing abnormal was felt in the abdomen which was flat, soft, and not tender. From the fistula came an almost constant discharge of liquid fæcal matter mixed with the undigested remnants of food and at times a flow of almost pure bile. In order to prepare him for a further operation to relieve the obstruction and to restore the continuity of the gut he was given a liberal diet by the mouth and at the same time nutrient enemata of peptonised milk and beef-tea were given every four hours. Many methods were tried to improve the skin around the fistula, but all methods of covering and protection had to be given up in favour of constant self-cleansing by the patient himself; he was provided with cotton-wool mops with which he wiped away all discharge at once, with the result that the skin rapidly improved. On Nov. 11th he had two evacuations per rectum, pale in colour and very offensive, which apparently consisted of the remains of the nutrient enemata and perhaps some fæcal matter which had been lying in the colon since before the first operation. On the 15th and 16th he seemed to have some obstruction above the fæcal fistula as this did not discharge; there was also some sickness and the upper abdomen became distended. Four grains of calomel overcame this and an enema was given per rectum but without result. On the 19th a similar attack occurred which lasted 36 hours but was relieved by an injection of plain sterilised water into the fæcal fistula. No other attack occurred and on Dec. 1st the lad was fatter and in better condition altogether. It was therefore decided to attempt to close the fistula and to relieve the obstruction, or, failing this, to anastomose the small intestine with the ascending colon. On the 4th the patient was anæsthetised and after the fæcal fistula had been closed by suturing its edges together the skin of the abdomen was thoroughly cleaned. An elliptical incision was then made around the fistula. The incision was carried through the muscular and other layers into the peritoneal cavity. The portion of intestine and abdominal wall involved in the incision could now be lifted up. The distal portion of gut was followed down until it became involved in a dense mass of adhesions in the right iliac fossa. These were broken down with much difficulty and the small bowel was freed. An oblique scar-like ridge could be felt in the parietal peritoneum in the right iliac region. A portion of the sigmoid flexure was also involved in the adherent mass and this was freed and the bowel was traced from the fæcal fistula to the upper rectum. The bowel involved in the fæcal fistula presented the characteristics of the jejunum. The bowel above and below was clamped and excised and end-to-end union was effected by one of Stanmore Bishop's bobbins and

two rows of fine silk sutures. The abdomen was cleaned and the abdominal wound was sutured with silkworm-gut. After the operation the patient became greatly collapsed and restless. A pint of normal saline solution was given per rectum and one-fiftieth of a grain of strychnine every two hours hypodermically. In the evening, as there had been no sickness, one grain of calomel every hour until four grains had been given was ordered, as it was thought advisable to excite peristalsis as soon as possible. Sips of soda-water and milk to the extent of half an ounce per hour were also allowed. On the next day (the 5th) he was fairly comfortable but looked very pale and pinched; his temperature was subnormal (98°) and his pulse (120) was very small and soft. There was slight abdominal pain. In the afternoon an enema of soap-and-water and turpentine was given, but with no result. Nutrient enemata were ordered every four hours. In the evening, about 7 o'clock, he vomited, bringing up a large quantity of curded milk (apparently all he had taken during the day); the milk was therefore stopped and sips of champagne, soda-water, and barley-water were substituted. At this time his temperature was still a little subnormal and the pulse was 120. The bowels had not acted and the nutrients were well retained. There was no abdominal distension. On the 6th his general condition was worse and he was lying low in the bed with drawn face and quite listless, the tongue was dry and brown, the pulse ranged from 130 to 140, and the temperature was 97°. Oral feeding was again tried and a small quantity of diluted milk resulted in the vomiting of about half a pint of bile-stained material. This kind of material was frequently vomited during the day. The abdomen was flat. There was no action of the bowels in spite of repeated enemata. Panopepton and champagne were tried by the mouth, but the second dose was vomited. He went gradually downhill until the 9th (five days after the operation). He had been repeatedly sick, the vomit being gastric and bilious. There had been no action of the bowels in spite of repeated evacuating enemata. On the 9th he appeared to be moribund. He was constantly vomiting brown bilious material, was listless and lying low in bed, and his surface and extremities were cold, shrunken, and bedewed with sweat. It was evident that effective peristalsis had not been set up and this was probably owing to the muscular coats not recovering from the inhibition brought about by the injury incurred by the visceral peritoneum during the separation of adhesions. The abdominal wound was therefore rapidly opened up, the presenting piece of small intestine was incised, and a Paul's tube was inserted. No gas or fæces escaped. The intestine was flaccid and there were no signs of peritonitis. On the 10th there had been no discharge from the newly made fistula. He was vomiting constantly and looked likely to die at any time. In the evening the Paul's tube was removed and 15 ounces of warm water were injected into the proximal side of the fistula. Part of this returned and with it some very foul fæcal material. On the 11th the fistula was discharging well, vomiting was infrequent, and food by the mouth was being retained. By the 16th he was taking food freely, although there had been slight sickness from time to time. Between Dec. 16th and Feb. 16th, 1903, the patient continued to gain ground and put on flesh rapidly. He was fed liberally by the mouth and in addition was given nutrient enemata of increasing size until at the end of this time he was receiving from 18 to 20 ounces every eight hours, retaining and absorbing them, since very little waste came away with the morning wash out. Two small abscesses formed during this period, one behind the left ear and one over the left great trochanter. Both healed readily. On Feb. 16th he was brought up for his fourth operation, fat and well, and looking forward with keen interest to the prospect of recovery. An incision was made from the right side of the fistula outwards towards the lumbar region and carried down to the peritoneum. A finger was introduced and the loop of bowel forming the fæcal fistula was carefully separated and drawn outside the abdomen. The gut was clamped on either side about two inches away from the fistula. The loop of intestine between the clamps was then excised. The end of the distal portion was sutured, invaginated, and returned to the abdominal cavity. The end of the proximal portion was implanted into the ascending colon by the aid of a Murphy's button. Two rows of sutures were inserted round the button and a gauze drain in a split rubber tube was placed leading down to the anastomosis. The T-shaped wound was sutured with salmon-gut. The lad recovered well from the operation and had no bad symptoms. On the third day after the operation the bowels moved normally without any aperient and have moved daily since. The wound suppurated slightly, which was not to be wondered at considering the state of the abdomen, and the lad with a grin presented Dr. Kempe with the button on Feb. 23rd. The motions are slightly undigested but otherwise normal and the boy is rapidly gaining health and strength and also putting on flesh.

Remarks by Mr. BROWN.—From the standpoint of the physician I think this case is interesting from the following points. The marked dislocation of the apex beat, which was due obviously to the distension of the stomach and intestines, and which, although it was pushed up into the third interspace, was nevertheless half an inch internal to the nipple. The benefit obtained by the use of strychnine in the paralytic distension of the gut was most obvious and, on the other hand, the uselessness of intestinal disinfectants—i.e., salol, turpentine, &c.—to relieve the meteorism was also demonstrated. A comparatively low temperature with such an extensive inflammation was noteworthy and any large rise seemed to be clearly due to toxic absorption from the lumen of the intestine. The absence of suppuration was remarkable, since with the lowered vitality of the intestine it was only too likely that migration of organisms would take place.

Remarks by Dr. KEMPE.—This case seems to have been one in which a hæmorrhage into the abdominal cavity was succeeded by plastic peritonitis and intestinal obstruction. There was no evidence of any perforation of the hollow viscera and the source of the bleeding would seem to have been the parietal peritoneum in the right iliac region where a scar was found at the second operation. The value of enterotomy as a life-saving operation was amply demonstrated on two occasions. In each case the opening was made in the jejunum and yet the lad improved in condition and put on flesh with combined oral and rectal feeding. After the failure of the second operation the interest lies chiefly in the large amount of nutriment which was received and absorbed per rectum. As much as three pints of peptonised milk and beef-tea per diem were given in this way. For this I have to thank Sister Bartlett who was in charge and who carried out my instructions in the spirit as well as in the letter. Every care was taken not to overtax the forbearance of the rectum and lower colon and the final result was only obtained by careful training of these parts to do the work required of them. I would thank Dr. D. Ferrier, late house surgeon at the Salisbury Infirmary, for his careful notes from which this relation has been drawn. The successful results of combined oral and rectal feeding and the healthy character of the stools (which are almost completely digested) now lead me to believe that the lad's nutrition will improve, which happy result has not been the case in many recorded instances where a large length of small gut has been put out of action by short-circuiting or disease.

Note.—Since writing the above the patient has continuously improved and is now (August, 1903) doing all his ordinary work—viz., attending to his horses and riding at exercise every day. At first he gained weight too quickly, but now his weight is normal to him and he finds absolutely no inconvenience.

RESULTS OBTAINED AT MUNDESLEY SANATORIUM IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

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IT is now one year since we handed over the control of the Mundesley Sanatorium to Dr. Noel D. Bardswell and Dr. J. E. Chapman, so that the present seems a fitting time for the publication of the results which we obtained there. Though the Mundesley Sanatorium was not opened till December, 1899, we had patients under

treatment in another house from the preceding June, so that the period which has elapsed since the first of the cases now recorded came under observation may be stated as four years. From June, 1899, to June, 1902, 143 patients were under treatment and we have been able to follow the after-history of 141, leaving two of whom we have been unable to obtain reports. In the absence of any universally recognised system of classification of cases and results we have adopted one which we find applicable for practical purposes. The patients are divided into two main classes according to the absence or presence of fever and each of these are subdivided thus: (1) febrile cases, (*a*) those with advanced disease and (*b*) those with slight disease; and (2) non-febrile cases, (*a*) those in which the disease is of long standing and in which the active stage is a thing of the past and (*b*) those of recent occurrence. The febrile cases were those presenting during their first week of sanatorium life an average afternoon temperature of more than 99° F. The temperatures were taken in the mouth. Great care was always exercised to get the true reading by giving the thermometer sufficient time—15 minutes—and by excluding the modifying influence of exercise and the application of cold, &c. The non-febrile cases were those where the average temperature for the first week of treatment did not exceed 99°. Cases of advanced disease we make to include those with distinct clinical evidence of a pulmonary cavity or with an affection of more than two lobes. Table I. shows the condition of our 143 patients on admission.

TABLE I.—*Showing the Condition of 143 Patients on Admission.*

Febrile Cases.

Advanced disease, 54 (or 37·76 per cent.).	Slight disease, 13 (or 9·09 per cent.).	Total, 67 (or 46·85 per cent.).

Non-febrile Cases.

Long-standing disease, 37 (or 25·87 per cent.).	Recent disease, 39 (or 27·27 per cent.).	Total, 76 (or 53·14 per cent.).

It will at once be observed that we were by no means able to confine ourselves to strictly selected cases. In the early days especially of sanatorium treatment in this country many patients applied for admission who had obviously passed the stage when material improvement in their condition was procurable. 91, or 63·63 per cent., had advanced or else long-standing disease. Of the non-febrile patients, in 37 the pulmonary tuberculosis had presumably come to a standstill but after more or less wrecking the lungs and not before the general constitution had become undermined. In many of these the secondary changes induced by old-standing consumption in the organs of digestion and of circulation as well as those in the lungs themselves, chiefly demanded treatment. A large proportion of these patients had previously undergone long courses of treatment at various health resorts and in other sanatoriums. The remaining 39, or 27·27 per cent., non-febrile patients were, of course, the most favourable of our cases for treatment. They had neither extensive lesions of the lungs nor marked constitutional symptoms. In some there had never been manifest fever, in others this had been subdued before they were sent to us.

In dealing with the results of treatment we record first the condition of the patient at the time of discharge and then follow his after-history up to date. The following headings are used in regard to results: (1) Arrest, with fitness for work again; (2) arrest, but under the obligation of leading such a carefully regulated life as precludes the safe resumption of serious work; (3) improvement, where the general conditions are ameliorated, but where the occasional or constant persistence of fever indicates some activity of the disease; (4) no improvement, where fever and other symptoms remained unchanged; and (5) retrogression, including patients who died in the sanatorium.

TABLE II.—*Showing the Results of Treatment.*

Arrest with fitness for work.	Arrest with inability to work.	Improvement.	No improvement.	Retrogression.
47 (or 32·86 per cent.)	36 (or 25·17 per cent.)	38 (or 26·57 per cent.)	8 (or 5·59 per cent.)	14 (or 9·79 per cent.)

From Table II. it will be seen that in 84·60 per cent. arrest of disease or distinct improvement was attained, while in 15·38 per cent. no benefit was obtained. We now proceed to consider the progress made by our patients subsequently to their discharge from the sanatorium and up to the present date—that is, for the period of four years that have elapsed since our first patients left the sanatorium and of one year since the discharge of the last of the patients (see Table III.).

TABLE III.—*Showing the Progress of the Cases subsequently to Sanatorium Treatment.*

—	On discharge.	Satisfactory condition maintained.	Relapse but living.	Dead.	Total living.
Arrest with ability to work.	47 (or 32·86 per cent.)	42 (or 89·36 per cent.)	4 (or 8·51 per cent.)	1 (or 2·13 per cent.)	46 (or 97·87 per cent.)
Arrest with inability to work.	36 (or 25·17 per cent.)	22 (or 61·11 per cent.)	10 (or 27·77 per cent.)	3 (or 8·3 per cent.)	32 (or 88·88 per cent.)
Improvement.	38 (or 26·57 per cent.)	8 (or 21·05 per cent.)	12 (or 31·58 per cent.)	18 (or 47·3 per cent.)	20 (or 52·65 per cent.)
No improvement.	8 (or 5·59 per cent.)	0	0	7 (or 87·5 per cent.)	0
Retrogression.	14 (or 9·79 per cent.)	0	0	14 (or 100 per cent.)	0

An examination of this table shows that arrest was secured in 58·03 per cent. of all the patients and that as many as 93·97 per cent. of these are still living. Further, that improvement which did not, however, amount to arrest was obtained by 26·57 per cent. and that 52·65 per cent. of these patients are still living. If we now pick out the most favourable classes, those with early disease unaccompanied by fever or whose disease was slight and febrile, we find that in no single instance did improvement fail to be obtained. In 76·92 per cent. in each group such satisfactory arrest of disease occurred as to allow of the patient resuming his work, while in 30·76 per cent. of the former and in 15·38 per cent. of the latter group arrest occurred, but the patient's well-being depended on his following more or less an invalid's life. In the four years and less that have passed since the discharge of these patients from the sanatorium only four, or 7·69 per cent., of the whole number have died, while 40, or 76·92 per cent., have maintained their health and ability to follow an employment.

TABLE IV.—*Showing Particulars of Patients Admitted, Living, Fit for Work, and Dead, Grouped in Febrile and Non-febrile Cases.*

Febrile Cases.

Admitted.	Living.	Fit for work.	Dead.
Advanced disease, 54.	21 (or 38·88 per cent.)	0	32 (or 59·25) per cent.)
Slight disease, 13.	11 (or 84·62 per cent.)	10 (or 76·92 per cent.)	2 (or 15·38 per cent.)

Non-febrile Cases.

Long-standing disease, 37	30 (or 81·08 per cent.)	0	7 (or 18·92 per cent.)
Recent disease, 39	36 (or 92·30 per cent.)	30 (or 76·92 per cent.)	2 (or 5·13 per cent.)

Of the 43 patients who have died (see Table IV.) four died in the sanatorium. In the cases of two others death did not result from tuberculosis directly.

A point which is of special interest to us is the healing of the disease as evidenced by the complete disappearance of physical signs. In 17 (or 11·88 per cent.) of our 143 cases the signs have entirely cleared up. In another two cases the diagnosis had to be made on other evidence, no physical signs having existed at any time. The clearing up of physical signs is chiefly a matter of time. It is excessively rare to find in four months—the average time spent by our patients in the sanatorium—any very marked change in the stethoscopic examination of the chest, notwithstanding the

remarkable change that may have come over the individual's general being, but if many more months are allowed to elapse and the patient's physical examination is from time to time carefully conducted and compared with former records an unmistakeable improvement is often noted. Without doubt râles at one time audible over a third of a lobe may vanish, breath sounds which were cavernous over a very small area may become merely weak, and dulness extending over a whole lower lobe, with perhaps bronchial breathing and râles indicating a tuberculous affection of the pleura and the surface of the lung, may clear up if only watched for a sufficient number of months or even years.

One more piece of information we wish to extract from our cases, and that is in reference to change of climate. A good number of our patients, 32 in all, on leaving the sanatorium went to various health resorts on the Continent and elsewhere abroad, which are more or less renowned for the treatment of consumption. In many cases the principles of health maintenance had been thoroughly learnt and the patients chose to finish their cure in a sunnier and brighter climate; in others, progress with us had not been satisfactory, and it was determined that sanatorium treatment in England having more or less failed the effect of some recognised health resort be tried. Now the subsequent progress of these patients has been closely watched with particular curiosity and interest and we can honestly state that in no single instance has the course of the disease been materially different after going away than it would presumably have been had the patient remained in his own country. There is one class of consumptive, we admit, for whom a better winter climate than England, anyhow that of its east coast, can be found, and this class we never retained at Mundesley: we refer to the subjects of old-standing pulmonary tuberculosis with defective circulations and inability to stand cold, with cartarrhal symptoms and, perhaps, affection of the kidneys or other internal organs.

In our few cases of pulmonary tuberculosis associated with emphysema and asthma the patients did better than we anticipated. We feel some hesitation in referring to the disappearance of tubercle bacilli from the sputum, for it is hard to say when they have vanished for good. Repeated examinations of the sputum of a patient progressing very favourably may fail to discover bacilli, but on another occasion the same patient may suffer from some accidental catarrh and tubercle bacilli may reappear in the expectoration. In the cases of our best results all sputum ceased; in some of these bacilli persisted so long as there was any phlegm to examine and in others a gradual diminution in their number had been noted.

In conclusion, our experience emphasises the extreme importance of the early recognition of pulmonary tuberculosis. If adequate measures are taken in the very earliest stages of the malady we may hope to restore some 75 per cent. of our patients to more or less lasting fitness for work. In about 90 per cent. of these favourable cases the disease is sufficiently mastered to allow of the patient's life being indefinitely prolonged. The maintenance of his ascendancy over the bacillus depends, we believe, on the patient constantly living by rules which are based on careful observation of the individual's requirements and powers. He must expend in other ways no more energy than can safely be spared by the forces required to keep his malady in check and he must take no liberties with health. The supreme importance of these and other principles of sanatorium treatment is apt to be lost sight of by those relying on mere change of climate for the treatment of consumption.

ON THE TREATMENT OF THE SUMMER DIARRHŒA AND VOMITING IN INFANTS.

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THE question of the treatment and nursing of infants' summer diarrhœa and vomiting is becoming urgent again. It must be understood that this short account deals with it simply from the practical point of view, giving the experience of those methods which to my mind have proved most successful while I was resident at the Evelina Hospital. It has been said that babies suffering from this summer complaint die from thirst. Their intestines extract water from the circulation and the circulation from the tissues. The fluid supply is cut off by the damaged alimentary canal refusing to tolerate the input. All treatment then is directed against the cause—e.g., to clear out by the least irritating means the toxins which are the primary cause and at the same time to introduce a fluid that can be retained and absorbed. One has only to see the baby, lying in his cot, listless, restless, collapsed, with eyes half closed, and then to notice him rouse up suddenly with an eager look when a little water is placed upon his lips, or even if only a spoon clicks against the feeding glass. The infants must have fluid, they ask for it, and their appeal is physiological, even though the cause of their want be pathological. The treatment of this fatal disease consists almost entirely in good careful nursing, and this nursing resolves itself into three parts—feeding, rest, and cleanliness. Drugs have shown themselves to be of very doubtful assistance with one exception, oleum ricini, and this seemed most effectual given in one initial aperient dose, followed after a day by a course of from six to eight six-hourly drachm doses of the mistura olei ricini, B.P., with the addition of sodium bicarbonate, two grains to each dose.

Ordinary, not excessively bad, cases generally respond to the following course. On admission a nice warm bath is given and then, with the child's head hanging over the side of the cot, the stomach is washed out with slightly alkaline water, and when this comes away clear there are passed down the tube one drachm of oleum ricini and an ounce or two of albumin mixture with a drachm of beef-juice or raw meat-juice. If the child keeps this down he is fed again by the mouth with the same quantity in two hours. If, however, the food is rejected smaller quantities are given at shorter intervals, even as frequently as a drachm every quarter of an hour. If the baby continues to be sick the beef-juice or raw meat-juice is omitted and if vomiting still persists all feeding by the mouth must be stopped and intracellular infusion of normal saline solution is resorted to.

This brings us to the worst class of cases of diarrhœa and vomiting, which are admitted listless, with sunken eyes, retching, and looking almost past help. These, after an initial warm bath, are infused with normal saline solution, about four ounces every six hours with—if absolutely necessary—the addition of a very little brandy. I lay stress on the fact that an infusion of a small amount is more beneficial than one of half a pint or more, this latter being frequently followed by considerable hyperpyrexia, albuminuria, and in some cases general œdema. It is important to infuse extremely slowly. Repeatedly, when I infused rather rapidly, the temperature rose quickly. The normal saline solution enters the loose, baggy folds so readily and with so little resistance that one may be tempted to inject too fast. An ordinary four-ounce brass syringe with a piece of rubber tubing and a hypodermic needle, all previously boiled, seem to answer very well as an infusion apparatus for babies. Washing out the stomach must be left until the patient's condition permits it, but small enemata of normal saline solution have proved decidedly beneficial. Some of the solution is absorbed and what is not retained washes out the lower part of the bowel. Feeding entirely by the intracellular way can be continued for about 24 hours if necessary and then drachm doses of albumin mixture tried and, if retained, increased, and small quantities of beef-juice or raw meat-juice added. The infusions should be lessened and stopped altogether when the patient is able to take a sufficient quantity by the mouth. After 24 hours of feeding with albumin mixture we can attempt a gradual return to milk and we begin by adding drachm doses of peptonised milk or Benger's food to the albumin mixture, increasing gradually, until we give either peptonised milk or Benger's food undiluted. Benger's food is more popular with babies than peptonised milk. Before returning the baby to his mother we must, however, get him back to ordinary milk diet and it is found that a food which is borne better than the old milk and lime-water or barley-water mixtures is one of milk and an oatmeal gruel. A specially prepared oatmeal (Knorr's Hafermehl) seems to agree excellently with these babies. To this course of treatment we have returned again and again after various excursions from time to time to different other forms of feeding: we have used all kinds of cream mixtures; we have used whey, but none of these were satisfactory.

There are a few more points worth mentioning: we give very little brandy, and if it has to be ordered it is administered by preference hypodermically so as not to irritate the

stomach. We bathe the babies at least twice a day, but very, very gently, moving them as little as possible. The bath often seems to allay the thirst to some extent and always the restlessness. Except for the bath we keep the baby in absolute seclusion. We choose the quietest corner of the ward and we only disturb him when absolutely necessary. The nurse attends to him before feeding and immediately the feeding is completed the curtain is drawn over the child—we keep all bad diarrhœa and vomiting cases in curtained beds—and the baby is left "in retreat" until the next feed, if possible. The mouth of these patients requires a great deal of attention, and nothing keeps it better than ordinary cold water, or slightly alkaline water (sodium bicarbonate one grain to the ounce). It must always be washed out before food and—if we can risk it without exciting fresh vomiting—also afterwards. Medicated mouth washes are generally harmful through having too decided a taste, so causing a recurrence of sickness. The period when the care of the mouth is most important is while intracellular feeding only is being carried on. The swabbing of the mouth then does not only serve the purpose of keeping the part clean but also of allaying the thirst and the accompanying restlessness. We must not, however, allow ourselves to give in to the baby's evident craving for fluid which he shows by eagerly sucking the wet rag we are using and let him have a drink of water, because this misplaced pity has again and again re-started the barely arrested vomiting. Another point which the nurse must be extremely careful about is the thorough scrubbing and disinfecting of her own hands after having attended to the infant. This is most essential, as by infecting the baby's food with even the smallest particle of fæcal matter the sickness, which has just been stopped with great difficulty, may be started again. So much importance is attached to this matter in some children's hospitals on the continent that special nurses are told off to do the feeding, while others attend to the cleaning of the patients.

The above *regime* applies exclusively to acute cases. For chronic cases of diarrhœa and vomiting who cannot retain milk and milk mixtures, we have found malt soup very satisfactory. Babies can be kept on this food for as long as three weeks and then gradually be trained to take ordinary milk, generally *viâ* Benger's food. Horlick's malted milk also has acted fairly well in some cases of this kind. A new preparation, "pegnin," which has the great advantage of reducing the casein in cow's milk to a very fine, flocculent curd, promises to become a valuable addition to the infant's dietary. Another experience which we have had in obstinate cases of habitual vomiting is that some will not reject their food if it is introduced by the nasal tube, whereas all attempts at feeding by the mouth are useless. If to the treatment of chronic cases we could add sunshine and good, fresh, bracing country air, we might hope to carry it out with very much more chance of success. I append the formulæ of the foods above mentioned hoping they may prove useful.

Albumin mixture.—Beat up the white of two fresh eggs and add gradually one pint of cold, sterile normal saline solution. Stir up well and strain through muslin. Keep cold.

Beef-juice (Guy's Hospital Pharmacopœia).—One pound of lean beef is finely chopped and added to one pint of water. This mixture is then gently heated (being constantly stirred) until the temperature is 55° C. (130° F.) at which it is kept for 15 minutes. To this are added three ounces of beef-tea and a small teaspoonful of salt. The whole is then strained through muslin over a hair sieve and filtered into a flask in which it is to be kept. If placed in an ice box the juice will keep for two or three days.

Raw meat-juice.—One pound of lean beef is finely chopped. Add to it five ounces of water, mix up well, and stand on ice for three hours. Then strain through muslin, the meat being well squeezed. Keep in the ice-box.

Malt soup.—50 grammes (13 drachms) of wheat flour are well mixed up with one-third litre (12 ounces) of fresh cow's milk and the mixture is passed through a hair sieve. In another vessel 100 grammes (three ounces two drachms) of extract of malt are dissolved in two-thirds of a litre (24 ounces) of water at 50° C. (122° F.) and to this are added ten cubic centimetres (two and a half drachms) of an 11 per cent. solution of potassium carbonate. The two preparations are then mixed and boiled up quickly.

Knorr's Hafermehl.—Supplied by Messrs. Allman, 9, Cullum street, Fenchurch-street.

Pegnin.—Supplied by Farbwerke, 51, St. Mary-axe, E.C.

THE

SUCCESSFUL TREATMENT OF SPORADIC DYSENTERY BY APLOPAPPUS BAYLAHUEN.

BY WILLIAM FINGLAND, L.R.C.P. & S. EDIN.

IT falls to the lot of most practitioners to have from time to time to treat cases of sporadic dysentery, colitis, or one of its protean forms, and when a more or less chronic character is assumed no disease is so rebellious to treatment. And when we consider the grave pathological condition of the colon this is not a matter of much surprise. Briefly, the mucous membrane is thickened, œdematous, congested, and cyanotic; the eminences and depressions on its surface are practically obliterated. It is bathed in a muco-serous exudation and its surface is covered with hæmorrhagic petechiæ and suppurating foci. For the amelioration and cure of these conditions many remedies have been suggested, which I will mention later, but from collected experience the disease tends to pursue a chronic and incurable course.

The drug which I wish to introduce to the notice of the profession is indigenous to South America and in Chili and other provinces of the west coast of South America it is considered a specific for this disease. It is called locally hysteronica and its botanical name is Aplopappus Baylahuen. Messrs. Parke, Davis, and Co. of London have prepared and supplied me with a fluid extract thereof. The plant belongs to the class of balsams. The fluid extract is a dark green gummy fluid, of a syrupy consistence, and has a peculiar odour. It is not miscible with water and requires to be prescribed alone and not in combination. The dose is 20 minims thrice daily, suspended in a tablespoonful of cream, milk, or freshly prepared almond emulsion. During the exhibition of this drug the diet must be carefully supervised, all vegetables and fruits prohibited, and a diet of beef, mutton, fish, and light farinaceous dishes enjoined, with hot water and milk to drink, the latter with some caution. In the three cases (each possessing in a marked degree the typical symptoms of this disease) which have come under my notice and presently to be described the curative effects of this drug were so conspicuous that I hope other members of the profession, with more frequent opportunities, will give this drug a more extended trial, as judging from my own success it would appear to be a specific for this troublesome malady.

CASE 1.—The patient was a lady who was believed to have contracted the disease from drinking water when staying at Heswall, Cheshire (before the present water-supply was introduced). She has had many attacks during the last ten years, each attack increasing in severity. The symptoms were quite usual—nausea, vomiting, thirst, pain, tenesmus, tormina, with incessant diarrhœa accompanied with scanty muco-purulent dejecta and copious hæmorrhages. The last attack occurred two and a half years ago, when all the usual remedies were prescribed, including ipecacuanha, magnesium sulphate, and the newer astringents such as tannoform, tannigen, and fortoin. The colon was also irrigated with silver nitrate (which had formerly afforded good results), starch and opium, suprarenal extract in thin gruel, and other soothing astringents and sedatives with very little benefit. Hysteronica was prescribed for the first time, when all the symptoms gradually disappeared and the patient has now been free from any recurrence for two and a half years.

CASE 2.—A nurse in a Liverpool hospital contracted the disease when on a visit to Scarborough. She suffered from similar symptoms to the preceding, with very brief intermissions for four years. Latterly the anæmia and asthenia were pronounced, she was practically bedridden, and contemplated giving up her occupation. She had been under the care of several members of the staff of that institution but did not show any progress towards recovery. I mentioned this drug to her then medical attendant and induced him to prescribe it. After taking a few doses the improvement was marked and continuous, her usual health and vigour being rapidly restored. About 18 months have now elapsed without any return of the symptoms.

CASE 3.—An engineer aboard a steamship trading between Liverpool and the West Indies stated that he had contracted the disease from using impure drinking water in those

islands. His symptoms were similar to the above but not so severe as entirely to prevent him from following his work. I had tried magnesium sulphate but with no benefit, when I prescribed hysteronica which rapidly removed all symptoms of the disease. I last saw this patient on June 29th, 1902, when he was quite free from any recurrence and I have since been informed that he has remained in perfect health.

Liverpool.

A CASE OF TRAUMATIC TETANUS TREATED WITH ANTITOXIN; DEATH.

BY H. S. ELWORTHY, F.R.C.S. ENG.,
CASUALTY OFFICER TO THE GREAT NORTHERN CENTRAL HOSPITAL.

TETANUS, fortunately not a common disease in this country, is one of those which still maintain a very high mortality and therefore any therapeutic measures that may be taken to cure it must be of great interest to the medical profession, whether successful or otherwise. In the days before antitoxin the mortality from traumatic tetanus was something like 80 or 90 per cent., and at the present time, so far as I can gather, it amounts to about 50 per cent. or more, as unfavourable cases are probably not so often recorded as successful ones.

The case I have to relate was that of a boy, aged 14 years. He had had more than the usual share of illnesses and accidents and was not robust. He "picked at his food" and was difficult to feed at all times, was slight of build, and what one would describe as a little delicate. While playing in a cricket field on June 27th he stepped on a spike of some kind which perforated the sole of the left foot. Medical aid was not sought for. The wound suppurated and apparently got well, so that no more was thought about it. On July 2nd he fell down on his back but made no complaint of it. On the 4th he began to complain of pains in the back, but thinking it was only a little rheumatic stiffness he went away and spent the day with a relative. On the morning of the 5th, however, he found that he could not open the mouth properly and had spasms of the muscles that caused him to bend forwards and several times he fell down on his hands and knees.

When I saw him for the first time he was walking about the room and a spasm occurred about every five minutes, causing the head and back to bend forwards. The pain was not severe and passed off in a few seconds. He declined to lie down as that caused more pain. He bit his tongue slightly in one of the spasms. The mouth opened about half an inch. There was no tenderness and the pains were about the trapezii muscles, none about the jaws. On examining the foot a small piece of grit, like cinder, and of about the size of a millet seed, was found imbedded in the skin lying in a smooth cavity. This was removed and the wound was dressed with a 1 in 20 solution of carbolic acid. The parents had given him a dose of liquorice powder without result. Three grains of calomel were given at once and a mixture of bromide and chloral was ordered to be taken every three hours. At 3 P.M. the spasms were still recurring about every five minutes. He had tried to sleep but was awakened in about ten minutes by a spasm; or else just before becoming unconscious he got clonic contractions of the hands and arms. He was becoming tired. The abdominal muscles were rigid, as were also those of the back. The spasms caused the expulsion of large quantities of flatus. By 6 P.M. I had procured through a druggist some tetanus antitoxin from the Jenner (now Lister) Institute of Preventive Medicine. As it was on Sunday the special messenger found some difficulty in getting it, having to try at several places before he could obtain any, and this caused some delay. Mr. E. H. Hare, who saw the patient in consultation and rendered valuable assistance on several occasions during the illness, administered chloroform while I excised the wound from the sole, swabbed the base with chloride of zinc, 40 grains to the ounce, and injected ten cubic centimetres of the antitoxin under the skin of the abdomen. He slept for about one hour after this and then the spasms returned as before. I could see no improvement, although the patient said that the pains were less severe but more frequent. His face was red, the skin was sweating, the pulse was irregular (just after a spasm) but of fair volume, and the temperature was 98·8° F. At midnight the spasms were becoming more frequent, so another injection of ten cubic centimetres of antitoxin was made under the skin. He slept better—as much as 20 minutes at a time between the spasms—and felt better. Urine was passed into the bed on several occasions, so there was no occasion to use a catheter.

On the 6th at 10.30 A.M. a third injection was made into the left thigh and the foot was dressed as the bandage had become loose. At 12.40 P.M. he seemed quieter but attempts to feed him by the mouth brought on the spasms. The head was now retracted and the spasms caused arching backwards but were never severe nor was there any risus sardonicus at any time. At 5 P.M. he had been asleep for an hour after taking the medicine. He was then taking 15 grains of bromide, 15 grains of chloral, and five minims of tincture of cannabis indica every three hours, but the spasms now returned just as frequently, sometimes at intervals of five or six seconds. He was again put under chloroform and ten cubic centimetres of antitoxin from another source were injected into the spinal canal between the third and fourth lumbar vertebræ and the foot of the bed was raised nine inches so that it should gravitate towards the medulla. Half an hour afterwards he had a succession of spasms coming on every few seconds. He then slept for an hour, having occasional spasms at intervals of from 20 to 40 minutes. He could now turn on his side, which he could not do before owing to rigidity of the arms. He paid no attention to sounds, so that a smoking concert across the road had no effect on him nor the accidental slamming of the door by the wind. Ten grains of calomel were administered as the bowels had not acted.

On the 7th, at 9 A.M., the patient had had a fairly good night. The bowels had not been opened. The spasms came on severely from 8 to 8.30 A.M.; they were more sudden and jerky and caused a sort of cry from the contraction of the abdominal muscles expelling air from the lungs. There were clonic spasms as well. Food could not be taken by the mouth. He was again chloroformed and a second injection was made into the spinal canal at 9.45 A.M. A stomach tube was passed and an egg with five ounces of milk and some meat extract were given and a nutrient suppository was inserted into the rectum. The foot of the bed was raised as before. Some antitoxin was also applied locally to the foot. The spasms began again at 11 A.M. and became rapid and more severe at 11.15 A.M.; there was a succession of about 16 in a short interval. He was sweating, the pulse was 96 and fairly regular, the respiration was 46 and rather shallow, and the temperature was 101·2°. At 12.50 P.M. medicine was passed through a funnel and tube into the mouth. He could swallow with difficulty. On one occasion the right eye was found deviating outwards. At 1.25 P.M. no improvement was noticed and a sixth injection of antitoxin was given under the skin. From the morning until the end chloroform was given at each spasm, sufficient to relax the muscles. They were occurring from every 10 to 15 minutes. In the afternoon the features looked drawn and pinched. The patient was fed through the tube every five hours with milk, egg, and extract of meat, and when he could not swallow the medicine it was given him with the food. At 5.30 P.M. he began to have the appearance of septic fever. As the bowels had not acted since the commencement of the illness a turpentine enema was given and was returned only a little stained by fæces. At 7.30 P.M. he collapsed and appeared to be moribund; the pulse was intermittent, irregular, and feeble, and the breathing was jerky and shallow. The eyes were semi-closed and the lips and the tongue were dry. The patient however, rallied and at 8.30 P.M. was given a nutrient enema which was expelled about ten minutes afterwards, just as the suppositories were. He also involuntarily expelled his evacuations with some force after this. The spasms occurred now at intervals of from five to eight minutes. The temperature was 104° and he was sponged at intervals, which brought it down to 102·8° by 11.20 P.M. The skin over the bony parts was red and threatening bed-sores. It was rubbed with spirit each time he was turned over.

On the 8th he was fed again at 1.40 A.M. and some opium, digitalis, and strophanthus were added to the chloral mixture. On passing the stomach tube it was firmly gripped by muscular contraction. The spasms continued with some

regularity every seven or eight minutes but were less severe. There was a slight expiratory cry, with arching of the back and retraction of the head, with general rigidity, for a few seconds, then a succession of very rapid and shallow breaths as if the diaphragm could work to a slight extent but was hampered by the abdominal and thoracic muscular rigidity. This enabled a little chloroform to be absorbed and the breathing became normal and the muscles relaxed in a few seconds. At about 5 A.M. the patient was unconscious and the corneal reflex was absent. He was rather blue about the lips and the face had a dirty septic looking colour. The temperature was 107°, the respiration was 54, and the pulse was from 120 to 140 but difficult to count. He was sponged again and the foot was dressed with carbolic acid and gauze. He was fed at 6.50 A.M. He had a longer interval from spasms—about three-quarters of an hour. At 7.30 A.M. the temperature was 105°. He had eight more spasms between this time and 10.33 A.M., when he died in one of them, the temperature just before death being 105°.

Dr. F. W. Andrewes very kindly examined the piece of skin removed from the foot and reported that he had found one or two long slender bacilli in the tissue—staining by Gram's method—which were not sporing and hence could not certainly be identified as tetanus; that there was inflammatory infiltration consisting chiefly of polynuclear leucocytes beneath the site of the wound; that horizontally I had cut far wide of it, but vertically it extended to the confines of the piece removed and probably deeper still. At the time I could not see with the naked eye that I had not got beyond the inflammatory area, nor feel any difference with the finger.

The convulsions throughout were mild in character—nothing more than one gets in ordinary epilepsy—and death appeared to have resulted from the high temperature and exhaustion from the number of spasms.

The antitoxin in this case appeared to have little or no more effect than the chloral and bromide and the injection into the spinal canal to be no more efficacious than under the skin. The question of injecting into the ventricle of the brain had been discussed but it was decided not to do so as there did not appear sufficient evidence that the results obtained justified the additional risks from the operation. Physostigmine has been used in some cases with success—so, indeed, have many other drugs—and more often without. It is a distinctly depressing remedy and for that reason I did not feel inclined to use it. The serum treatment is not as generally successful as we could wish and it is to be hoped that further researches on toxins, immunity, &c., may result in the production of a serum that will be satisfactory in all cases. It is quite possible that it may have had some effect in mitigating the severity of the spasms. The local application at the commencement might be of some use as an addition to the injections.

Ehrlich's theory is a distinct advance in giving us a vague idea of the complicated chemical changes that occur in the body and makes one speculate on the effect of injecting serum. If it were simply a question of neutralising a poison there would be nothing to worry about, but when we think of the intricate chemical grouping of such complex bodies as have been called amboceptors, haptophores, the various antibodies, toxoids, &c., one is inclined to marvel as to whether the injection of an antitoxin may not in some way interfere with the natural production of antitoxin by the cells of the body, that is to say, interfere with the natural cure rather than promote it. The same reasoning, however, probably applies to the action of drugs as well, of which the medical man has been said to know little. Perhaps we shall know more by the end of the century.

Crouch-end, N.

THE TREATMENT OF CONGENITAL PHIMOSIS.

BY J. F. WOODYATT, M.R.C.S. ENG., L.R.C.P. LOND.,
PRINCIPAL MEDICAL OFFICER, HALIFAX UNION POOR-LAW HOSPITAL.

I HAVE lately performed a new operation for phimosis which is very simple and which gives better results than circumcision, inasmuch as after the operation the glans is left covered by a foreskin which is easily retracted and replaced. Before I describe the operation I should like to emphasise the fact that in congenital phimosis the constriction which prevents retraction of the prepuce is caused by a tight ring of mucous membrane just inside the prepuce. The skin of the prepuce is, in my opinion, never redundant; it is very elastic and is never the cause of the condition. If more proof is required that phimosis is caused by a stricture of the mucous membrane let us examine a case of paraphimosis which has been reduced by cutting the tight band at the back of the glans. It will be found that the incision is quite out of sight inside the orifice of the prepuce. Now the cause of the condition should guide us in the treatment of these cases and my operation consists of cutting the constriction and preventing its recurrence by the introduction of sutures. I have performed the operation in a number of cases and the result has always been perfect—that is, a glans covered by prepuce which is easily retracted and replaced. Why the operation of circumcision has been so frequently performed I fail to see. The object of the surgeon should be to leave the deformed organ in a normal condition and not to mutilate it by cutting away the covering of the glans. Let us apply our conservative surgery to the penis and circumcision will no longer occupy a place in modern surgery.

My method of operation is to hold the penis between the left thumb and forefinger, to retract the prepuce as far as it will go, and then with a pair of sharp-pointed scissors held in the right hand to cut the stricture first on the right side and then on the left side. It is not necessary to slit up the mucous membrane far back but it should be done equally on both sides. When the stricture is relieved I retract the prepuce and separate the mucous membrane from the glans and also remove any smegma there may be around the corona. Now by introducing one suture into each cut the operation is complete. Each suture is introduced so as to make what was a longitudinal incision into a transverse one. This is done by joining the commencement of the incision to its termination in the same way that simple stricture of the pylorus is now relieved. I use fine chromic gut and an ordinary sewing needle. No after-treatment is necessary. The little wounds are inside and will heal readily if left alone. If the sutures do not come away of themselves they may be removed in a week or ten days, when it will be found that the prepuce is easily retracted and replaced.

Halifax.

Reviews and Notices of Books.

Life and Labour of the People of London. By CHARLES BOOTH, JESSE ARGYLE, ERNEST AVES, GEORGE E. ARKELL, ARTHUR BAXTER, and GEORGE H. DUCKWORTH. Final volume. Notes on Social Influences and Conclusion. London: Macmillan and Co., Limited. New York: The Macmillan Co. 1902. Pp. 451. Price 5*s.* net.

THIS is the seventeenth and last volume of Mr. Charles Booth's great work. Roughly speaking, the latter half of it is devoted to giving an abstract of the contents of the complete work (pp. 225-439). The first series (of four volumes) is devoted to Poverty, the second (of five volumes) to Industry, and the third (of seven volumes) to Religious Influences. The final volume is entitled "Notes on Social Influences and Conclusion." "My work now completed has been from first to last," the author says, "dedicated to my wife without whose constant sympathy, help, and criticism it could never have been begun, continued, or ended at all." And a noble work it is in its aim and in its execution. The reader who looks for teaching finds facts from which he has to construct his own inferences. "Some introduced views," says Mr. Booth, "and convictions have been intentionally allowed to show themselves here and there in comments made, but no body of doctrine is submitted."

The idea with which Mr. Booth began his work was that every fact which he needed was known to some one—the information had only to be collected and put together. But it was necessary to see that the statements received were really facts; they had, as he puts it, "to be reduced to some common measure of validity." Those

obviously false had to be rejected, the improbable withheld, the exaggerated toned down, and the requisite emphasis given to an understated truth. A large inquiry made on these principles naturally demanded much careful work on the part of painstaking men of acute observation and high intelligence. Mr. Booth had for the most part the same co-workers throughout; their individual views were various but they worked to the common end of unbiased exposition and their anticipations as to the outcome ("perhaps the most subtle form of bias," as he keenly remarks) differed greatly and changed from time to time as the facts accumulated. Mr. Booth was fortunate in his assistants; the fact that he selected them so wisely shows his judgment. There is constant evidence that the inquiry was carried out by men of clear vision who were also men of the world. There is no blinking of plain facts. The working of things is plainly stated. The brothel and the various forms of prostitution are, for example, described in the plainest language, so that the thoughtful among us may realise the nature and surroundings of the social evil which we wish to cure. It is, perhaps, not too much to hope that a larger knowledge of its nature and manifestations may lead to measures more likely to be useful than any at present attempted.

It might be imagined that a book with such a scope, being full of statistical details, would be dull. In such an inquiry statistics are of course necessary, but they do not appeal to everyone. Mr. Booth appears to take a positive pleasure in them, but he has no word of censure for the weaker brethren who do not share it. "If I may borrow from the vocabulary of a more charming art, I would," he says, "in the opening phrases of my finale introduce again the statistical motif of earlier volumes," and he goes on to advise those whose souls are not attuned to figures and who find no harmony in their tabular arrangement to pass lightly over these pages of his score. This advice may be followed by those to whom it is addressed. They will find that more remains behind—that the residue is intensely interesting and often lightened by humour. There is, for example, an instructive story of a good clergyman who gave pecuniary assistance to one of his flock who was unable to work because he lacked the necessary tools of his craft. The charity was first bestowed—inquiry followed. The recipient was a well-known burglar. To many people it will doubtless come as a surprise that the occupations of the people are perfectly well known to those who work amongst the poor and that no secret is made of the fact by those who follow some one of the less esteemed industries. A deaconess was hailed from a window by a man who asked her to come and dress a wound on his hand. In answer to her inquiry as to how the accident happened he told her that in getting out of a gentleman's window the night before he had fallen on the railings.

The points dealt with in this volume are arranged under four chief headings: (1) Some Comparisons; (2) Habits of the People; (3) Notes on Administration; and (4) Conclusion. Overcrowding and extreme poverty do not always go together—a point which cannot have failed to strike anyone even moderately familiar with the life of the town. The very poor are always overcrowded but they are not the only ones affected. Those who have to live near their work have often to pay huge rents for scanty accommodation. The localities where this state of things exists are given in detail. Mr. Booth refers with due praise to Mr. Rowntree's inquiry into the poverty of York—a city in which fewer recent sanitary improvements have been made than is the case in London.

The subjects considered in Part II. are: (1) Marriage and Morality; (2) Sundays, Holidays, and Amusements; (3) Betting; (4) Drink; (5) Clubs; (6) Notes on Pawnbrokers and Money-lending; and (7) Economic Conditions of Life. The few who know intimately the life of the people of London will be struck with the accuracy of the picture here presented, and those now ignorant, who wish to know it, will be able to understand something of its true inwardness, for the book presents facts without impressionism or reserve. The ethical standard concerning marriage and morality differs greatly in the case of the poorest and the richest classes, but public opinion is not less strong amongst the former. The evil effects of Bank holidays and the increasing curse of betting are laid bare and the question of drink is considered calmly and without bias. The use and abuse of clubs are very clearly indicated. There is little moralising in the book but a comparison on the modes of thought of the Eastern and the Western nations must be cited:—"The Eastern method is to transfer the struggle of life from the arena of the world to that of the soul and quell it there, the Western to drown the tumult of the soul in action." There speaks the really wise man.

Part III. (Notes on Administration) deals amongst other things with public-houses, prostitution, the police, and housing. It is, on the whole, satisfactory to learn that Mr. Booth's observations on public-houses and on publicans place them in a less unfavourable light than that in which they are viewed by many serious reformers. He is of opinion, however, that public-houses should be under more stringent control and that the administration might well be carried out by a small committee of the London County Council, assisted by assessors. He believes that as a result new legislation would be directed to the extra rating on the increased value created by granting licences, to placing clubs under the same restrictions as public-houses, to alterations in the regulations of the hours of supply, to the avoidance of penalising drinks which contain little alcohol, and possibly to the municipal ownership of licensed houses.

Of the metropolitan police Mr. Booth gives, on the whole, a very favourable account, although he is inclined to believe that "as police-court witnesses they are too expert." A magistrate who constantly heard their evidence said that he had learnt when to distrust it. "Perhaps this is a safeguard," says Mr. Booth, "for if accepted in so critical a spirit this expert professional evidence will be taken for what it is worth and no more." On the question of housing there is much valuable information. There is a large and clear map showing the places of worship, the schools, and licensed houses in Central and East London.

Part IV. contains the Conclusion which deserves the most careful study; it is very short, occupying only 16 pages. It can neither be condensed nor summarised. It must be read as it is written. Charles Booth has done a great work for those who live and labour in London. May it in due time bear fruit.

Foods: their Composition and Analysis. By ALEXANDER WYNTER BLYTH, M.R.C.S. Eng., F.I.C., F.C.S., and MEREDITH WYNTER BLYTH, B.A., B.Sc., F.I.C., F.C.S. Fifth edition, thoroughly revised, enlarged, and rewritten. London: Charles Griffin and Co., Limited. 1903. Pp. 616. Price 21*s.*

WITH the advance of analytical methods and with, also, fresh legislation on the adulteration of food, it was inevitable that a further edition of this well-known and standard work on foods should be issued. Certainly great advances have been made since Mr. A. Wynter Blyth brought out his "Practical Chemistry," a quite small volume compared with the book before us, and his treatise on "Poisons," which is uniform with it. Mr. Wynter Blyth has now availed himself of the assistance of his son in editing the work and to collaboration we may assign some new chapters, as that on the Bacteriology of Water and the Detection and Estimation of Arsenic. Much of the work of necessity has been rewritten owing to the fact that since the issue of the previous edition legislation has been

extended and new matters have arisen for consideration arising out of the beer-poisoning epidemic in the Midlands. The introductory chapters on the History of Adulteration have, we think, been wisely retained, as well as those dealing with the legislation on this subject in other countries. This plan, as far as we know, has not been adopted in other works and the chapter alluded to affords very interesting reading, tracing not only the kind and degree of fraud practised in regard to food in early times but relating also the methods of detection employed. It might be anticipated that the work of the Analytical Sanitary Commission of THE LANCET would be described in this section and it is so, the authors acknowledging the value of the work of THE LANCET, past and present, in regard to protecting the public against the adulteration of its food. The chapter on the Examination and Analysis of Water is excellent and quite up to date, but we think that the section on Alcohols and Spirits might have been extended with advantage: we can find little in it differing from that which appeared in the previous edition on whisky, brandy, and gin, yet during the past few years some important contributions on the chemistry of potable spirits have been made, notably by Allen, Schidrowitz, Hewitt, THE LANCET Special Commissions, and others. We find, by the way, in the present edition a paragraph on whisky in which the bad effects of spirits are referred to furfural. In other sections the word is spelt "furfurol." A misprint in the previous edition has also evidently escaped the authors' attention in the proof-sheet. Thus in a paragraph on the detection of aldehydes by means of fuchsine it is recommended to make up a standard solution containing 0·050 gramme per litre of acetic anhydride. "Anhydride" should, of course, be "aldehyde." The footnote on p. 398 in regard to tannin in brandy might have been left out as it is now somewhat ancient history. We still think that analysts should give more attention to the question of differentiating by chemical analysis one kind of spirit from another. As it is, if a sample of spirit is sent to the public analyst which has been purchased as brandy and yet which proves to be whisky or worse he will report it on his certificate as genuine so long as its alcoholic strength is satisfactory, and probably few analysts are aware of the chemical evidence which can be brought to bear in distinguishing a genuine grape spirit from a malt or a grain spirit.

We congratulate the authors on having brought this well-known work up to modern requirements in regard to the detection of the adulteration of food. We have expressed the opinion before that the work is of a thoroughly standard character and that it is a very valuable and trustworthy guide to the modern analyst.

Medical Microscopy, designed for Students in Laboratory Work and for Practitioners. By T. E. OERTEL, M.D., Professor of Histology, Pathology, Bacteriology, and Clinical Microscopy, Medical Department, University of Georgia. With 131 Illustrations, some coloured. London: Rebman, Limited. 1903. Pp. 362. Price 9*s.* net.

THE author of this book recognises the fact that medical works are being produced every day and that an addition to medical literature is not to be made light-heartedly. Owing, however, to the rapid growth of microscopy as an aid to diagnosis and to the fact that, in America at all events, those who graduated more than a decade ago received but scanty instruction in laboratory work, it is believed that there is a distinct need for some work such as the present volume. It is especially intended for the beginner in microscopy and for the man who has to dispense with the advantages of a laboratory or of a personal teacher. In a work which in the short space of 362 pages undertakes to treat of the technique of section cutting, staining methods, bacteriology, morbid histology, and the histology of the blood it is needless to speak of sins of omission, indeed, omission of all but absolutely necessary details becomes a virtue. A rigid selection of the best methods and the elimination of all non-essentials alone make the task possible, and even then it argues considerable courage to undertake such a work. Granted the above limitations it must be confessed that Professor Oertel has been successful in giving a clear and accurate account of his subject and one which will doubtless be of value to those for whom the book is intended. At the same time it is impossible to avoid the thought that a short time spent in a laboratory would be of extreme value even to the reader of this book.

A clear account of the microscope and of the methods of hardening, cutting, and staining tissues is followed by chapters on bacteriological methods with descriptions (which as a rule are excellent for the avowed purpose of the book) of the principal pathogenic germs. It seems a pity that in the section on Mycoses the illustrations should be of the common moulds, while the parasitic diseases of the hair are left unillustrated and very scantily described. The morbid histology of tumours is next treated in a section occupying some 30 pages. This portion is illustrated fully by reproductions of photographs of sections of the various tumours described. Nearly 60 pages are devoted to the study of the blood, and though the descriptions of methods and of the varieties of cells met with are good and clear it is impossible not to feel pity for the student who has to pick his way through the mazes of blood examinations without more help than this section can afford him, good though it is. The urine is decidedly well treated and the tabular statements of renal diseases with their associated urinary deposits will be very useful. The importance of knowing the total quantity of urine passed, and the futility of percentage analyses without this knowledge, are not so strongly insisted upon as English experience would warrant. A section on the examination of the sputum is good.

It is impossible not to recognise the many good points of this book, while at the same time it is equally impossible not to feel the great difficulties which lie in the way of an adequate treatment of so large a subject in so limited a space. The volume is well produced, but there is room for a little more careful "reading." Several proper names are misspelt—Ziehler for Ziehl, Marmoret for Marmorek, Schnell for Schüll—while certain decimal points are missing, so that both the bacillus coli and the streptothrix actinomycosis are said to be 5 μ in diameter, while the bacillus anthracis is described as 1 μ to 5 μ in thickness, and in describing the indol reaction sodium nitrate is substituted for sodium nitrite.

Manuel de Bactériologie Clinique. Par M. FUNCK, Chef du Laboratoire de Bactériologie de l'Université de Bruxelles, Directeur de l'Institut Provincial de Sérothérapie. Second edition. With seven coloured Plates. Bruxelles: Henri Lamertin. 1903. Pp. vii.–239.

THIS work, which has reached a second edition, is a *résumé* of the course of practical bacteriology given at the University of Brussels and is also intended to serve as a handbook for medical men by means of which they may learn how to make the ordinary bacteriological examinations which are required in practice. It must be confessed, however, that as a practical manual this book leaves much to be desired, many of the instructions being singularly lacking in precise details. This is readily understood if the volume is intended to be supplemented by the demonstrations of the practical course, but the lack of detail militates against its usefulness to practitioners. A very much larger amount of space is devoted to the consideration of immunity than is usual in a work on clinical bacteriology, very nearly half the book dealing with this subject. The author justifies this by insisting on the

importance of accurate knowledge in order that rational practical treatment may be employed.

The first two chapters are occupied by a succinct and clear account of Microscopical and Bacteriological Technique. The pathogenic organisms are studied in relation to the secretions or excretions in which they are usually found and the successive chapters deal with the bacteriology of pus, false membranes, sputum, and fæces. This arrangement has obvious clinical advantages, though it tends to the appearance, in the chapter on pus, of organisms such as bacillus tetani and bacillus tuberculosis, the principal function of which is certainly not that of pyogenesis. Turning to the practical side of the book and taking the serum diagnosis of typhoid fever as an example of the instruction given, we find that, though the examination of the "hanging drop" is mentioned, yet the only method described is that of macroscopic sedimentation in ordinary test-tubes requiring the use of no less than ten drops of blood. In the directions for the bacteriological examination of the blood the only method suggested for obtaining the blood is by simple puncture of the sterilised finger or ear, but blood for cultural purposes is now almost invariably withdrawn from a vein by means of a sterile syringe. There are short chapters on the examination of water (under this head the bacillus typhosus and the bacillus coli are studied), air, and soil. The book ends with a useful tabular statement of the organisms usually found in affections of the respiratory, digestive, genito-urinary, and nervous systems.

The work probably serves a useful purpose in relation to the practical course of which it is a *résumé* and certainly contains a very good account of the current views on immunity, but there is no reason why it should displace the excellent works on clinical bacteriology which are at present at the disposal of the English student or practitioner.

Bacteria in Milk and its Products, designed for the Use of Students in Dairying and for all others concerned in the Handling of Milk, Butter, or Cheese. By H. W. CONN, Ph.D., Professor of Biology, Wesleyan University. With 43 Illustrations. London: Rebman, Limited. 1903. Pp. 306. Price 6*s.* net.

WE have already welcomed a work on "Agricultural Bacteriology" by this author and the present volume is characterised by the same directness of aim, practical nature, and clear separation of facts from probabilities which marked the previous book. The title-page indicates those for whom the work is intended, but in addition it will be useful to boards of health and sanitary officers who are interested in the connexion between milk and disease.

After a short preliminary chapter on the Nature of Bacteria the sources from which these organisms gain access to milk are dealt with and the means by which contamination may be kept within bounds. Keeping strictly to practical methods the author holds that with *ordinary precautions* the number of organisms in milk at the dairy can be reduced to 1000–5000 per cubic centimetre. The typical milk bacteria, and those which produce objectionable changes in that fluid, are then studied and there is a short account of the various dietetic products of the alcoholic fermentation of milk with an appreciation of their value. The changes in the number and character of the organisms of milk produced by temperature and time are described, and in Chapter V. there is a well-balanced account of the pathogenic organisms found in milk and their influence on the spread of disease, together with some useful hints on the methods to be employed in the study of milk epidemics. How the consumer of milk products is to be protected by sanitary regulations, by methods of purification, and by methods of sterilisation or pasteurisation is considered in detail. Purity of milk really resolves itself into a matter of expense and regulations are required to protect the poor. The work being designed as much for dairy workers as sanitarians a considerable part of the book is taken up by a consideration of the relations of bacteria to the processes of butter and cheese making. Curiously enough, it appears to be the oleomargarine factors who have paid most attention to the bacteriology of butter.

A final section is devoted to a short account of methods of analysis, in which attention is drawn to the conclusions which are yielded by a rough qualitative separation of the micro-organisms present into "acid producers" (lactic), gelatin liquefiers (enzyme producers), and others. Attempts to determine the absence of pathogenic bacteria except in quite exceptional circumstances are regarded as useless. The general appearance of the book is satisfactory but a reference number on page 66, line 16, is omitted and there are some very curious divisions of words allowed by the printer. This work cannot fail to be of interest and use to those who are concerned with the production, distribution, or regulation of milk and its products.

New Inventions.

A SIMPLE EYELID EVERTER.

THE recent extension of the application of the x rays to the treatment of trachoma necessitates, of course, the eversion of the eyelids during the exposure of the patients to their influence. This can be done in the usual manner, but it has the grave disadvantage that the hands of the operator are of necessity exposed also, and it is to obviate this that we have devised the simple appliance represented in the accompanying illustration. This enables one to evert the eyelids without contaminating the hands with the discharge—a distinct advantage considering the infective nature of the condition—and to maintain the eyelids in the everted position without in any way exposing the hands of the operator. It will be seen that the instrument consists of a spring ending in two jaws coated with india-rubber and curved to correspond to the curvature of the palpebral margins. These serve to grip the eyelashes and the india-rubber coating enables them to do this even in those cases in which the

eyelashes are extremely short. Attached to the outer of these jaws is a curved piece of wire which is so adjusted as to correspond to the upper border of the tarsal plate when the clip is in position. To apply the instrument the spring is pressed together and the eyelashes are seized between the jaws of the clip in such a way that the curved piece of wire is to the outer or cutaneous aspect of the eyelid. The whole clip is then simply turned upwards and can be readily fixed in position either by a tape passed round the head or by simply letting a tape which has been fixed to the clip fall over the vertex, maintaining the clip in position by its weight.

The clips are very inexpensive and we have found that they are very comfortable to the patients. The india-rubber can be readily renewed and the whole can be easily sterilised by boiling. They have been made for us by Messrs. Harry Cox, Limited, of Cursitor-street, from whom they can be obtained.

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THE BRITISH MEDICAL ASSOCIATION

MEETING AT SWANSEA.

THE SECTIONS.

MEDICINE.

FRIDAY, JULY 31ST.

Dr. R. J. M. BUCHANAN (Liverpool) opened the discussion on

Susceptibility and Infection.

After tendering his apologies for any shortcomings in his remarks on account of the shortness of the notice received he said that he would approach the subject mainly from its clinical and practical aspect. He considered natural resistance and its opposite susceptibility to infection to be distinct potential and vital phenomena. Immunity might be defined as resistance to a disease and there was a difference between immunity to the bacilli and to their toxins, just as there were pure bacterial infections and bacterio-toxic infections, though no hard-and-fast line could be drawn between them. The phagocytic theory of Metchnikoff and its readjustment to more recent theories were discussed. Reference was made to the action of leukæmic blood on bacteria. In natural resistance the alexins were to be regarded as protective agents by virtue of the dissolution of organised foreign substances which they normally effected, whether they were foreign red blood corpuscles or bacteria. Increase of resistance, general or local, mainly depended upon hyper-leucocytosis and methods of increasing natural resistance by production of hyper-leucocytosis were referred to. The natural resistance against toxins was regarded as a means by which the alexins and phagocytic cells were enabled to act protectively. In reference to acquired susceptibility Dr. Buchanan emphasised the importance in medical practice of recognising the part played by such adverse conditions as starvation and bad diet, exposure to heat, cold, and moisture, fatigue, and diseased conditions as general interferences with resistance. The importance of recognising the rôle of mixed infections was discussed, with special reference to pulmonary tuberculosis. Professor Welch's hypothesis of reciprocal infection provided material for much serious thought. Recognising in cultures of pathogenic bacteria intracellular and extracellular poisonous substances Dr. Buchanan asked—Were the bacteria while manufacturing these toxins living under conditions normal to them? Did the culture media contain the very substances which provoke the bacteria to form such toxins and immunising bodies? Had they any certain proof that bacteria living in conditions natural to them produced any such toxins at all? The possibility of reciprocal infection between different species of bacteria was pointed out. Assuming the possibility that under conditions natural to them bacteria did not produce poisons, Dr. Buchanan suggested that in a case where an animal was naturally immune to a specific bacterial invasion there would be nothing in its tissues or body fluids which affected the bacteria in any way. On the other hand, should any alteration of these tissues and fluids have taken place before invasion, conditions arose which acted upon the bacteria to make them offensive factors—in fact, the determination of the disease was dependent not upon the invasion of the bacteria alone but upon the action upon them of the tissues and fluids of a body antecedently deranged. Or both host and bacteria might be in an abnormal state prior to their meeting. When the question as to how bacteria brought about disturbances of the body metabolism was considered it should also be remembered that bacteria did not always effect this change and that disturbances of metabolism had probably existed previously and might have been a causal agent. The immunising power of human milk was referred to and it was suggested that the susceptibility to tubercle in hand-fed infants might thus be accounted for, the cow being a susceptible animal. In conclusion, Dr. Buchanan discussed the question of racial and individual resistance and susceptibility relative to inheritance.

Dr. A. MCPHEDRAN (Toronto) took exception to the statement that the natural resistance varied with the natural vigour of the individual. Were not strong, vigorous young men very prone to contract enteric fever? He would also like to ask Dr. Buchanan how the well known efficacy of the inoculation of erysipelatous streptococci as a treatment for malignant disease was to be explained.

Dr. D. C. MCVAIL (Glasgow) referred to patients apparently in the highest bodily vigour attacked with tuberculosis and other diseases. Might it not be a chemical change which constituted susceptibility as in the culture media used in the laboratory? A closer study of the culture bases on which bacteria throve might in the future elucidate this problem.

Dr. G. PARKER (Bristol) communicated

A Case of Bronzed Diabetes.

The patient, a man, aged 65 years, suffered from diabetes for five months before his death from coma. During life definite greyish-brown pigmentation was noticed on his face, trunk, and limbs, but not on the mucous membranes. The urine did not average more than 50 ounces daily and before the onset of coma it contained no acetone or diacetic acid, but about 5½ per cent. of sugar. At the post-mortem examination besides pigmentation of the skin and muscles there was very marked hypertrophic cirrhosis of the liver and to some extent of the pancreas and spleen. All these organs, as well as the lymphatic glands, were so infiltrated by a pigment containing iron that they were of a deep brown colour, changing to a brilliant blue after treatment with hydrochloric acid and ferrocyanide of potassium. Sections showing these changes were exhibited in the room and the liver and pancreas were placed in the museum. The intestines after removal quickly turned to a dusky metallic grey. This disease was at first thought by Hanot, Marie, and others to be a complication of diabetes, but the view was gaining ground that it was a form of toxic cirrhosis in which hæmoglobin was changed to hæmosiderin and retained in the body, while diabetes came on in a proportion of the cases either from irritation of the suprarenals or from cirrhosis of the pancreas.

Dr. MCVAIL read a paper on

The Treatment of Uræmia by Spinal Puncture.

Œdema in acute renal affections developed suddenly and was universal and the connective tissue in the brain was involved in the general œdema. There was thus produced a condition of increased intracranial over-pressure, as the cranium was an undilatable chamber. Convulsions and coma occurring in connexion with albuminuria had very generally been regarded as the effects of uræmic poisoning, but Dr. McVail had for some years been in doubt as to the truth of this poisoning theory. In his view they were due to the increased intracranial pressure and if the symptoms of convulsions and coma in renal disease were due to intracranial pressure that pressure would obviously be lessened by puncture and drainage of the spinal arachnoid space. In 1900 and again in the present year of 1903 he had had the opportunity of practically determining this question. In the first of these years a patient with acute albuminuria and œdema, after severe intracranial pain followed by convulsive attacks repeated during 30 hours, had become almost blind, and notwithstanding free perspiration by hot-air baths and pilocarpine he became comatose. The operation of spinal puncture was performed at Dr. McVail's request by Dr. D. N. Knox. The spinal fluid fell in drops from the cannula for three-quarters of an hour and then the cannula was withdrawn. In all about six drachms of fluid escaped, the patient being entirely unconscious and no anæsthetic being required. Within four hours the patient began to regain consciousness and his sight commenced to return. He slept a natural sleep during the night and awoke in the morning entirely free from pain or mental dulness or confusion and with perfect vision. No more fits occurred. The urine rapidly increased in amount, the albumin rapidly diminished, the œdema disappeared, and he left the hospital some weeks afterwards with only a trace of albumin present in the urine. The second case was that of a man in whom albuminuria had quickly developed with moderate œdema of the surface. In a few days he had become mentally confused and he was still mentally confused when he was taken to the Royal Infirmary, Glasgow. His urine contained a large amount of albumin. Hot-air baths and pilocarpine produced free perspiration, but without benefit to his cerebral state, and 36 hours after admission the comatose condition was deep. Dr. J. Patrick performed spinal puncture and fully an ounce of fluid escaped. Again, as in the first case, at the end of

about four hours consciousness began to return and he made a good recovery. The result of the spinal puncture in these two cases proved, in Dr. McVail's opinion, that the pain, the convulsions, and the coma of acute albuminuria were due in many, if not in all, instances to the sudden increase of intracranial pressure and not to uræmic poisoning of the nerve centres. They further proved that this increased intracranial pressure might, in at least some instances, be effectually relieved by spinal puncture.

Dr. T. N. KELYNACK (London) and Mr. SYDNEY R. WILLIAMS (Bristol) communicated a paper on

The Comparative Value of Oral and Rectal Temperatures in the Study of Pulmonary Tuberculosis.

The conclusions arrived at were based upon 17,420 observations in 300 different cases, in all stages and of every variety of tuberculous disease of the lungs. It was shown that in a healthy adult during rest the rectal temperature was normally a little less than 1° F. higher than the oral, but after exercise the rectal temperature was raised from two to three degrees. After a man had played an hour at lawn tennis, for instance, the rectal temperature would rise from 99° to 101·4°, though in the same circumstances the oral temperature had only risen from 98·4° to 98·6°. These normal or physiological variations in the temperature in the rectum deserve careful attention. In 38 per cent. of the patients examined the rectal temperature bore no constant relation to the oral. In 11·3 per cent. the rectal reading maintained a more regular range than the oral. In 1·3 per cent. of the cases the rectal temperature was constantly from one to two degrees above the oral record. Generally speaking, the discrepancies between oral and rectal temperature had been most apparent in patients with a comparatively slight degree of pyrexia, while they had more closely corresponded when a conspicuous and persistent degree of pyrexia existed. The results of the investigation seemed to warrant the following conclusions. 1. The temperature taken in the mouth during rest formed a trustworthy guide in the management of tuberculous cases under conditions of sanatorium life. 2. The temperature taken in the month during, or shortly after, exercise could not be considered trustworthy unless accompanied by such precautions as militated against their general practical applicability. 3. The temperature taken in the rectum during rest generally speaking registered higher than in the mouth but did not otherwise usually afford any special assistance in the management of tuberculous cases. 4. The temperature taken in the rectum during, or shortly after, exercise in both healthy and tuberculous subjects registered a temperature considerably higher than that in the mouth, and whilst in the non-tuberculous the return to normal was more rapid than in the tuberculous no special advantage for the latter appeared to accrue from this method.

Dr. CHOWRY MUTHU (Wells) read a paper on

The Treatment of Pulmonary Tuberculosis by Formaldehyde.

The methods by which he had administered the drug were: (1) by an inhaler, using a mixture of 40 per cent. formalin, one part; chloroform, one part; rectified spirit, two parts, with a few drops of liquor ammoniæ to neutralise the pungency; (2) by vaporisation; (3) by intravenous injection as suggested by Dr. Robert Maguire; and (4) by electricity, using Franci que Lôtte's method of transfusing formaldehyde by static currents of electricity. The first and second of these methods were advocated as shortening the duration of the treatment. As to the third and fourth methods it would, Dr. Muthu said, be premature to speak of any positive and definite results at present as the trials had not yet been sufficiently extended.

Dr. BUCHANAN remarked that before coming to a conclusion as to the value of formaldehyde he would like to compare cases which had been treated solely by this reagent with others treated in other ways.

SUBSECTION OF ELECTRO-THERAPEUTICS.

WEDNESDAY, JULY 29TH.

Dr. H. LEWIS JONES (London), the President of the subsection, opened a discussion on

The Treatment of Malignant Diseases by Electrical Methods.

He said: It gives me great pleasure to open the proceedings of this subsection because I am sure we all feel that the occasion is one of note in the history of medical electricity in this country. The establishment of a subsection for electro-therapeutics under the auspices of the British Medical Association marks a stage in the advance of the subject in public interest and is a source of gratification, I feel sure, to all who have the interest of medical electricity at heart and to all those whose patient work for years past has helped to lay a firm foundation for the superstructure of the future. I trust that this gathering may be the first of a long unbroken succession of meetings at which the inevitable advances of the science of electricity with their equally inevitable applications to medical science may be described and criticised, to receive judgment in accordance with their deserts. The subject which is down for our consideration is one of the highest importance. All over the civilised world just now men's minds are being turned with fresh energy towards the object of finding some means which can be used to check the advances of that group of disease which we know as malignant disease. There is a feeling that in some way or other a cure might be found in spite of all failures of the past. In particular the newer discoveries of science are being examined by medical men and when any fresh fact seems to offer a clue the path which it indicates is being followed up minutely. Medical men have always shown themselves ready to make a practical application of the discoveries of science. Take, for instance, the applications of the x rays. The progress in this section has been almost purely a medical matter. It is the medical profession which has provided the stimulus for the elaboration of x-ray machinery and methods and has accounted for the astonishing development of Professor Roentgen's discovery. So, too, with the alternating current supplied in towns for electric lighting. No sooner was this type of current-supply available than its therapeutic possibilities were being examined and applied by medical men, with the result that it is now a thoroughly recognised method of medical treatment and is filling its own proper corner in the field of electro-therapeutics; so also with the high-frequency group of phenomena, the phenomena of condenser discharges as in the Leslie Miller lamp, and the phenomena of radio-activity—that newest development of chemical science. The grievous nature of cancer and the distress of mind from which its victims suffer make it a subject which must be discussed without enthusiasm. The discredit which has attached to the cancer-curing impostors of the past will deservedly be ours unless we are particularly careful to keep rigidly within the bounds of observed facts. In a semi-public assembly like the present one we must be excessively careful to avoid anything like over-statement of the case. The line which I believe we can most advantageously follow to-day will be that of relation of cases and the discussion of practical points—such as the best sort of tube, the best time of exposure, the number of applications which has been found most suitable, and so on. First let us examine the observed facts upon which there is now a general agreement of opinion among x-ray workers—namely, (1) that in rodent ulcer a satisfactory result may be often observed; (2) that healing of an ulcerated cancerous surface has been observed in a certain portion of cases; (3) that relief of pain in cancer is a fairly common experience; and (4) that superficial nodules, undoubtedly cancerous in nature, will sometimes decrease notably in size under x-ray treatment. This is the groundwork upon which we hope to be able to build, but the edifice is not yet built, nor do we even know whether we shall ever advance much further. Having reached our present position we are searching, I might say groping, in the dark for a fresh clue to enable us to progress another stage. What direction shall we take? Shall we use hard tubes, soft tubes, or medium tubes? Shall we operate our tubes with the anti-cathode red-hot or cool? Shall we have the tube close to the part or remote from it? Do we desire a reaction of dermatitis or do we need to avoid it carefully? No one knows, though some of us have opinions. Only a sifting of cases and a comparison of results will in time teach us whether these points matter or not. If we have no successes to relate let us tell of our failures and try to learn from them. The successful treatment of rodent ulcers by the x rays is now sufficiently established for us to leave it on one side at present. I do not mean that there is no more to learn about this particular disease but that the points not yet worked out are such as may be left for the present to individual investigators. I would suggest, therefore, that to-day we should limit our remarks to cases of undoubted sarcoma or carcinoma. If it were possible to do so we would choose to begin in the case of carcinoma with simple superficial

epithelioma, as for example, epithelioma of the lip in its earliest stages. If in such cases it could be satisfactorily established that a complete disappearance of the growth followed the treatment, it would be reasonable to advance to the more difficult problems of deeper growths. Unfortunately, these are just the cases which we cannot as yet obtain. Naturally the surgeon who feels that an immediate cure can be secured by a prompt operation is reluctant to run the risk of sacrificing his patient's chances by any procedure which involves delay. His attitude is not likely to change until it can be shown that the results of treatment by the x rays are as good as those now obtained by excision. That is the position of affairs to-day and the only material which is available for the study of the effect of the x rays upon malignant disease is among cases which are too extensive or too deeply seated for the surgeon to be able to touch them. Naturally this complicates matters a good deal and adds very greatly to the difficulties of the position. In spite of these difficulties cases have been recorded which show that the progress of epithelioma can be profoundly influenced by the application of the x rays. Even if we pass over partial successes and consider only such as are complete we find some satisfactory evidence to support us. Macintyre of Glasgow has recorded a case of epithelioma which filled the nasal cavity; eight months later the whole neoplasm had disappeared under x-ray treatment. The diagnosis of the case was confirmed by microscopical examination. In looking through the published records of the use of the x rays in cancer one cannot help feeling surprised to find how few of the alleged successful cases have been so recorded as to carry to those who read a reasonable conviction of success, and this, too, in spite of the fact that numbers of people are working at this subject, and scores, if not hundreds, of cases have been treated. Half a dozen cases of unmistakeable cure of undoubted cancer, if minutely reported, would be worth more just now than any number of vague statements about partial improvement, favourable effects, and the like. The more one examines the published cases the more suspicious one becomes. In most of them there is some flaw in the evidence. Either the diagnosis is uncertain or the patient is not more than partially relieved at the time of writing or he has been so unfortunate as to die from some intercurrent disease. It is greatly to be wished that all medical men who have recorded favourable cases will periodically supply further notes of the later progress of their patients. In short, while there is a quantity of evidence to support the contention that the x rays act beneficially in malignant disease the amount of evidence to show that cures have resulted is lamentably meagre. What can be the explanation of this? Here is an agent which very commonly gives relief to some of the symptoms produced by a malignant growth and yet fails to give as much relief as is really required. Is it because of some defect in our technique, or is it because the cases subjected to x-ray treatment are ill chosen, or, finally, is it from some inherent defect of the method of a fundamental kind? This is the crux of the situation. First as to technique. Have we yet to discover that some tubes only emit the right kind of x ray? Have we to use our tubes differently? or do we fail from insufficient perseverance? The nature of the tube, the degree of penetration of the rays which it gives off, the proximity of the tube to the affected part, the production of a reaction or not, are all points on which further knowledge is wanted. Already there is a divergence of opinion as to the need for a dermatitis or not, for while some observers think that the good effect is in proportion to the amount of dermatitis, others hold a quite opposite view. Secondly as to the selection of cases. Most of us will agree that the cases hitherto submitted for x-ray treatment have been of the most unpromising character. Most, if not all, of them have been of a kind which were already too advanced to be other than practically hopeless from the first. And whereas the failure has usually been from the reappearance of the disease in a vital organ remote from its original seat, the application of the x rays has so far justified their employment by improvements at the place to which they were applied. Thirdly, as to inherent defects in the x-ray method. It may be that all our efforts will be in vain because of this; but until the method has been tried for simple cases at an early stage we cannot abandon our attempts. In my opinion the proper course to adopt would be to start the x-ray treatment as soon as possible after the removal of the primary growth by the surgeon and not to wait until recurrences have seriously spoiled the chances of success. I would avoid all masking of the surrounding parts by impervious screens for fear lest the screens should shield some foci of disease. It is probable that the use of lead screens have contributed a good deal to the failures of the past. I would use a medium tube and would prefer to operate with a hot anti-cathode. I would avoid dermatitis by arranging the exposures suitably and I would continue the treatment with occasional breaks for three, four, or five months. In conclusion, it is necessary to speak of other proposed electrical methods—namely, the high-frequency method and the use of the static machine. Both of them have been tried and both have had some slight success to show. In both methods there is a common factor—namely, the presence of cathode rays—and it seems to me possible that these may require further examination. Curiously enough, radium has lately been tried for the relief of cancer and cases of its favourable action have been mentioned. The rays emitted by radium are of two kinds, one apparently identical with the x rays and one with the cathode rays, and it may be that the combination of the cathode rays with the x rays has some special advantage.

Mr. J. F. HALL-EDWARDS (Birmingham) continuing the discussion said that the failures so far noted were largely due to the extremely unfavourable character of the cases submitted to the treatment. He had no doubt at all that cases of early epithelioma of the surfaces of the body could be cured by the x rays in a satisfactory manner. As to internal cases he had treated a case of cancer of the rectum by applications to the sacral region, and his patient was alive still after three years had elapsed and the growth had diminished in size. He had often noticed that with the appearance of a dermatitis the patient began to feel better. He would like to know whether the use of the x rays did harm in some cases by leading to the liberation of toxins during the process of regression of the tumours under treatment. He agreed in preferring a medium tube with a hot anti-cathode. He insisted less now than he had formerly done on the necessity for producing a sharp dermatitis.

Mr. CHISHOLM WILLIAMS (London) had obtained good results from the use of the high-frequency machine. His method was, he believed, very important if successful results were to be obtained by that apparatus. He used an electrode of glass tube so exhausted as to emit x rays. Its vacuum could be judged by seeing whether the wall of the tube emitted a green phosphorescence. If it did this x rays were being produced. There were present, therefore, x rays, cathode rays, ultra-violet light, and general electrification. The tube could be put in contact with the patient and x-ray burns were not at all likely to result. He had obtained marked relief in many cases but had no complete cure to record as yet.

Dr. C. H. ALLFREY (St. Leonards) suggested that drugs might be employed together with the electrical treatment; possibly iodide of potassium might be useful to remove the products of the breaking down of the growths.

Dr. HORACE MANDERS (London) had tried experiments with the high-frequency current, using vacuum electrodes of blue glass, particularly of cobalt glass. He advised the study of the pulse tracings during and after treatment, also a careful examination of the urine.

Dr. LOVELL DRAGE (Hatfield) had found benefit in many cases of malignant disease from the use of cinnamate of sodium as a hypodermic injection; he thought that this method might give improved results if combined with the electrical treatment. The effect of cinnamate of sodium had been surprisingly good in some of his cases.

Among other matters touched on was Radium and its Possible Therapeutic Uses. It was pointed out that radium had one valuable quality which would help in proportioning the times of exposure—namely, that its radiations were uniform in strength.

The PRESIDENT, in closing the discussion, said that several valuable points had been elicited by the debate. He believed that the vacuum electrode used with a high-frequency coil might develop into a useful instrument. The diffused x rays offered some advantages, particularly in the diminished risk of x-ray burns, and it was highly probable that the coexistence of cathode rays around such a tube might be useful. He had treated a patient after an operation for the removal of a recurrent carcinoma in the glands of the neck with the object of preventing a further recurrence. After three months of mild x-ray treatment the scar of the operation

wound began to feel hard and it was again excised. A microscopical examination showed the presence of a few cancer cells, much fibrous tissue, and some extravasated blood corpuscles, and the pathologist who reported on the specimen was doubtful as to its exact character. The specimen removed at the preceding operation was of typical carcinoma, rich in cells. The x rays seemed, therefore, to have influenced the growth and to have altered its character in a favourable direction. He thought that a more vigorous application of the rays might have been successful in preventing the reappearance. He hoped that the subject of x-ray treatment for malignant disease would again come before the Subsection of Electro-therapeutics in 1904 and that further advances might by that time have been achieved.

THURSDAY, JULY 30TH.

Mr. CHISHOLM WILLIAMS opened a discussion on

The Treatment of Tuberculous Diseases by Electrical Methods.

He said that he had treated 43 cases of pulmonary tuberculosis by high-frequency methods. After two years 40 patients were living, though one was now very ill with tubercle of the urinary tract. An examination of the sputa showed an increase of bacilli for a time followed by a decrease. It was also common for the patients to have a distinct rise of temperature for a few days. As soon as this subsided the patients showed manifest improvement. In tubercle of other regions of the body the results at present were uncertain. In lupus the high-frequency treatment by the high vacuum glass tube was very satisfactory.

The PRESIDENT having pointed out that the discussion might be conveniently arranged under the heads of pulmonary tuberculosis, tubercle of other organs, and lupus, most of the later speakers dealt mainly with lupus.

Dr. P. S. ABRAHAM (London) expressed a preference for the x rays in the treatment of lupus and pointed out the peculiarity that cases apparently identical might behave quite differently under apparently identical treatment.

Dr. J. S. BOLTON (Nottingham) recounted his experiences in pulmonary tubercle and thought that the high-frequency treatment had a bad effect if applied to subjects in whom a hectic temperature existed.

Dr. V. RUTHERFORD (London), Dr. R. B. MCVITTIE (Dublin), Dr. H. H. HULBERT (Bexhill-on-Sea), and Dr. JOHN HADDON (Denholm, N.B.) also spoke.

Mr. HALL-EDWARDS read a paper on Some Points in X-ray Therapeutics and Mr. W. K. WILLS (Bristol) showed a Modification of the Leslie Miller Lamp, in which the iron discharging points were altered to carbon with iron cores.

FRIDAY, JULY 31ST.

Dr. J. C. FERGUSSON (Great Malvern) read a paper on High-frequency Currents as a Remedy for some Forms of Deafness.

Dr. DONALD BAYNES (London) read a paper on the Treatment of Painful Amputation Stumps by Electricity.

Dr. W. S. HEDLEY (London) contributed a paper on Practical Muscle-testing which was read by the Secretary.

Dr. BOLTON opened a discussion on X Rays in the Diagnosis of Thoracic Disease.—Dr. W. H. I. SELLERS (Preston), Dr. FERGUSSON, Dr. J. E. GARNER (Preston), Dr. MCVITTIE, and Mr. CHISHOLM WILLIAMS joined in the discussion.

The subsection was well attended throughout the meetings and had an attendance ranging between 25 and 35.

OBSTETRICS AND GYNÆCOLOGY.

FRIDAY, JULY 31ST.

Mr. J. H. TARGETT (London) opened a discussion on

The Diagnosis and Treatment of Tuberculosis of the Uterus and Adnexa.

He said that it was not until 1886 that attention was drawn by Hegar to the importance of this affection; in 1894 Whitridge Williams gave a good account of it and at the Fourth International Congress of Obstetrics and Gynæcology held in Rome in 1902 the subject was fully discussed. In the post-mortem records of Brompton Hospital it was shown that in 6 per cent. of tuberculous females there was disease of these organs. The number of cases in which the disease was primary and limited to the genital organs was much smaller. The modes of infection were: 1. By the blood stream, the seat of original infection being in the lymphatic glands, particularly the bronchial. The tubes were readily infected. 2. By the peritoneum, either from general miliary tuberculosis of the peritoneum or from localised disease due to ulceration of the neighbouring bowels, or the fluids in the peritoneal cavity may convey the infection through the abdominal ostium. Tuberculous salpingitis was found in 50 per cent. of the cases of tuberculous peritonitis. 3. By direct infection from the neighbouring organs—i.e., the ileum, the rectum, and the bladder. 4. From sexual intercourse; this could not be denied, though it was very rare. Tuberculosis of the glans penis was excessively rare and the infection must come through the semen. The forms of tuberculous disease met with were: 1. Acute tuberculous salpingitis. This mostly affected the outer end of the tube; the rugæ were studded with tubercles. The fimbriæ were not obliterated as in ordinary salpingitis and the orifice of the tube was often patent. Hæmatosalpinx and pyosalpinx might develop. 2. Caseous salpingitis. 3. Tuberculous pyosalpinx. The peculiarities of this form of pyosalpinx were (1) that the fimbriæ were present; (2) the contents were honey-like and often sterile bacteriologically; and (3) there was absence of adhesions and in consequence twisting of the pedicle sometimes occurred. Tuberculosis of the body of the uterus might be diffuse miliary and non-ulcerative, or granular, friable, and caseous; or there might be pyometra from the cervical canal being blocked. In the majority of cases of tuberculosis of the uterus the infection came from the tubes. As regards the symptoms and diagnosis of tuberculosis of the uterus some writers said that recognition was impossible, but with this he did not agree. The previous history, particularly with reference to any tuberculous disease, was very important. The absence of any apparent cause was suggestive; thus pyosalpinx in the virgin was almost always tuberculous. It was formerly taught that amenorrhœa was present, but further experience had shown that this was not so. Dysmenorrhœa was a common symptom. As regarded pain it might be stated generally that this was not present unless other organisms were associated with the tubercle bacillus. Large pyosalpinx without pain, especially without recurrent attacks of pain, was usually tuberculous. When the disease affected the body of the uterus there were bacilli in the discharge or in curettings, but in about 1000 specimens from curettings which he had examined he had found tubercle in only seven. In the treatment of the disease laparotomy was very beneficial. When the operation was performed for tuberculous peritonitis and thickened tubes were found these should be removed; but he had seen some cases where rapidly fatal results followed interference, in one case in 12 hours and in another in 24 hours, and he doubted the wisdom of removing very adherent and caseous tubes, though there was no doubt of the advisability of removing tuberculous pyosalpinx. At the close of his remarks Mr. Targett gave a lantern display of a series of 18 very fine photographs of specimens of tuberculous disease of the uterus and adnexa.

Dr. J. A. C. KYNOCH (Dundee) then read a paper on

Primary Tuberculosis of the Uterus (Cervix).

There were, he said, three forms: (1) ulcerative, (2) miliary, and (3) papillary. The last extended on to the vaginal portion; there was no friability but the growth bled readily on examination. There was menorrhagia or amenorrhœa, the former occurring in the early cases and the latter in later ones. Hysterectomy was performed, curetting not being sufficient on account of the possibility of infection of the uterus.

Dr. ARNOLD W. W. LEA (Manchester) read a paper entitled

Five Cases of Tuberculous Disease of the Tube treated by Operation.

He said that the diagnosis of removed specimens should never be made without a microscopical examination, as nodules having a naked-eye resemblance to tuberculous nodules were sometimes met with in other conditions. In two of his cases no other part of the body was affected; in only one was the ovary affected. The symptoms included pain which was a marked feature; the effect on menstruation varied. It was never possible to rely on the presence of bacilli in the vaginal discharge. The previous history was very important; there was usually sterility. The evening rise of temperature was also important. Spontaneous cure by the development of fibrous tissue was possible. The technique of the operation was to ligature the uterine cornu first, then to ligature by sections across the broad ligament, and afterwards to suture the peritoneum over. If drainage was used it should be per vaginam.

Dr. HERBERT SNOW (London) thought that congestion of the pelvic organs produced by corsets favoured the development of tubercle. He advocated milder methods of treatment than hysterectomy.

Dr. F. W. N. HAULTAIN (Edinburgh) said that in operating for tuberculous peritonitis they should pay particular attention to the tubes. In regard to the diagnosis of tuberculosis of the tubes dysmenorrhœa was the most constant symptom. He narrated a case of tuberculous disease of the cervix and showed a drawing of the condition. The patient, a single woman, *virgo intacta*, had had a discharge for seven years. She had a peculiar soft growth of the cervix which was not bleeding on examination but had a bluish colour. Supravaginal amputation of the cervix was performed and on microscopic examination the growth proved to be tuberculous.

Dr. E. J. MACLEAN (Cardiff) narrated a case of tuberculosis of the tubes in a patient, aged 34 years, who had been married four and a half years and was sterile. She had suffered for four months from pelvic pain, dyspareunia and definite pain referred to the umbilical region, menorrhagia, and leucorrhœa. There was a swelling in the pouch of Douglas. At the operation both tubes were found studded with tubercles and containing caseous matter. The adnexa were non-adherent. The right ovary contained a cyst of the size of a walnut. Both the tubes and the ovaries were removed and the patient became strong and gained flesh after the operation.

Dr. C. R. STRATON (Salisbury) narrated a case of tuberculous disease of the cervix and the vaginal wall apparently due to infection from the patient's husband who was suffering from renal tuberculosis.

Mr. TARGETT, in reply, said that the x-ray treatment was not likely to do good in tuberculous disease of the cervix, as all specimens showed deeply placed nodules. He did not advise removal of the uterus with the tubes. It was doubtful whether the pure tubercle bacillus was a pyogenic organism, and when pus was present he would always suspect that other organisms were present. He had met with two cases of tuberculous peritonitis in which tubal gestation had occurred.

Dr. A. H. N. LEWERS (London) communicated a paper (which was read by the Vice-President) entitled

A Case of Hairpin in the Uterus discovered by the X Rays.

The patient went to the London Hospital and said that she was pushing in the hairpin in order "to open an abscess" when it disappeared. On examination there was some blood-stained discharge but nothing could be felt of the pin. The uterus and the bladder were examined by the sound with negative results. A radiograph taken by Mr. HANNAN showed the hairpin distinctly lying with its points downwards. Under anæsthesia the cervix was dilated with Hegar's dilators and each point of the hairpin was seized with a Spencer Wells forceps and the pin was extracted. There was also found a mass of placental tissue of the size of a walnut but no fœtus. The patient became very ill after the operation, having a rigor and a temperature of 106° F. Subsequently pelvic cellulitis and suppuration in the left thigh developed, the latter necessitating incision. An incision was also made into the vaginal roof and pus was evacuated. Ultimately, however, she completely recovered. Reference was made to the literature of the subject of foreign bodies in the uterus. Negebauer had recorded 74 cases and of these 16 were due to hairpins. This was the first case recorded in which the diagnosis had been made by the x rays.

A vote of thanks to the President (Professor W. Stephenson (Aberdeen), proposed by Dr. HEYWOOD SMITH (London) and seconded by Dr. F. J. MACAN (London), concluded the proceedings of the section.

STATE MEDICINE.

THURSDAY, JULY 30TH.

Dr. JOSEPH GROVES (Isle of Wight) contributed a paper upon

Security of Tenure for Medical Officers of Health

in which he discussed the anomalous position of the provincial medical officers of health and advocated for them the same security against capricious dismissal or non-re-election as that which had already been conceded to the metropolitan and the Scottish medical officers of health and to the Poor-law officers in England and Wales. He quoted the opinions of many Members of Parliament on the subject, including that of Sir Walter Foster who, when Parliamentary secretary of the Local Government Board, said that the Board considered appointments for short periods and precarious tenure injurious to the public health.

Mr. HERBERT JONES (Hereford) pointed out that it was principally through the report of the medical officer of health that the Local Government Board could ascertain whether the Public Health Acts were being properly administered and there was a distinct Gilbertian humour in the readiness with which a medical officer of health could be got rid of by a defaulting sanitary authority whose inactivity he had merely mentioned in his annual report.

Dr. F. J. H. COUTTS (Blackpool) and Dr. A. E. MOLE (Gower) agreed with the views of the previous speakers and the PRESIDENT, Dr. J. C. MCVAIL (Glasgow), said that it must be extremely difficult to produce an argument in favour of the existing conditions. The medical officer of health being constantly in opposition to someone needed security far more than did the Poor-law medical officer.

FRIDAY, JULY 31ST.

Dr. F. G. BUSHNELL (Plymouth) contributed a paper on

Ministries of Public Health

in which he advocated the establishment of a Ministry of Public Health based on the expanded medical department of the Local Government Board in coöperation with the General Register Office and having associated with it a consulting body of eminent representative members of the medical profession, including the Presidents of the Royal Colleges of Physicians of London and Surgeons of England. He thought that the Minister at the head of this new department would best serve the interests of public health if he did not go out of office with every change of the Government and was summoned only to those meetings of the Cabinet which were concerned with the work of his department.

Mr. H. H. TIDSWELL (Cardiff) thought that general practitioners might do more in furthering public health questions among their working-class patients. He would like to see more medical men appointed as assistants to medical officers of health.

Dr. GROVES spoke of the non-appreciation of the work of the Local Government Board in high quarters and said that medical officers of health were handicapped by an insufficiency of inspectors.

Mr. H. D'ARCY ELLIS (Stourbridge) thought that the public health service might be organised on the lines of the Factory Department of the Home Office which had done remarkably good work since Dr. B. A. Whitelegge had been chief inspector. He was of opinion that medical officers of health did not receive that support from the Local Government Board which they were entitled to expect.

The PRESIDENT said that the question of the appointment of a Minister of Public Health had been before the country for at least 20 years and there was no doubt that inquiry into the public health administration of England and Wales was necessary in view of the introduction of a new Public Health Bill before very long.

Mr. TIDSWELL, in introducing a discussion on

Physical Degeneration in Children of the Working Classes,

said that his object was to draw attention to certain physiological influences which, he considered, were responsible for the nervous restlessness and waywardness so characteristic of the children attending public elementary schools. There was, in his opinion, some factor having a bad influence on the health of children which did not exist before the Education Act of 1870 came into force. The system of cram was turning children into talking machines, and in injuring their reasoning powers it was both demoralising and degrading, and was calculated to render the judgment unstable and capricious and to interfere seriously with the mental and moral equilibrium. He advocated the entire abolition of corporal punishment in schools and urged the systematic inspection of all schools by a medical officer attached to each school who should see every class as it assembled with a view to detect infectious and other diseases in their early stages and who should examine the eyesight, the teeth, the hearing, and the general condition of the children and should visit any pupil at home in case of sudden illness.

Dr. DAWSON WILLIAMS (London) said that they required a definition of "physical degeneration" and asked whether the conditions which produced physical degeneration were more

active now than they were formerly, for there was not any statistical evidence that the amount and degree of degeneration in the population were increasing. The practical question appeared to be whether the factors which tended to prevent adequate physical development could be removed. He hoped that the decline in the birth-rate would not be mixed up with the question of deficient physical development, for degeneration might begin in utero, and attention should be given to safeguarding the health of the mother during pregnancy. If there was an increased degeneration it might be due to the altered forms of food which were partaken of in towns and whether the use of starchy foods for infants had increased or not it was certainly excessive. He believed that the defects in the diet of infants caused a condition of defective nutrition which accounted for not only physical mal-development but imperfect or retarded cerebral development which was the cause of what was called over-pressure. He thought that it was a mistake to use the terms "mind" and "brain" as interchangeable, for the mind could not be tired but the brain when tired was obliged to rest. He agreed with Mr. Tidswell that medical inspection of schools was desirable but he doubted whether it would be proper to follow the children to their homes.

Mr. J. M. MACKENZIE (Kirkby-in-Ashfield) thought that physical degeneration was partly acquired and partly transmitted. He was of opinion that medical men could not deal with the question alone but must call to their aid both the parson and the schoolmaster.

Mr. JOHN STRACHAN (Dollar) protested against children being required to do a large amount of work at home in addition to their lessons at school and pointed out that those who did the best at school often had a larger proportion of work at home.

Dr. H. W. LANGLEY BROWNE (Dudley) considered that the medical profession were to blame in not calling the schoolmaster more often to their aid. He did not think that the medical officer of health or the medical officer to a school should visit children in their homes. He believed that the alien immigration was deteriorating the British race, though he considered that the main factor in the degeneration was the food question.

Dr. GROVES looked to syphilis as one of the greatest causes of physical degeneration and deplored the repeal of the Contagious Diseases Acts.

The PRESIDENT said that if physical degeneration were so pronounced as had been maintained it would surely have had some effect upon the death-rate, whereas the death-rate had gone down. He considered that children should be allowed to grow up more naturally, for they were often living and breathing in places and under conditions which were deleterious to their health, although those conditions could be altered at little or no expense. He approved of the medical examination of children in schools.

Mr. W. JONES MORRIS (Portmadoc) contributed an exhaustive paper upon

The Housing of the Working Classes in Small Municipalities

in which he detailed the action which had been taken in the town of Neath for the provision of workmen's houses. He urged the erection by municipalities of model houses which should act as types for the private builder to follow.

The lateness of the hour prevented any discussion upon this paper.

PSYCHOLOGICAL MEDICINE.

WEDNESDAY, JULY 29TH.

Proceedings in this section were opened by an Address from the PRESIDENT, Dr. ROBERT JONES, which was published in THE LANCET of August 8th, p. 366.

Dr. W. FORD ROBERTSON, pathologist to the Scottish Asylums, then opened a discussion on

The Pathology of General Paralysis.

He stated that the pathogenesis of general paralysis was still unknown with anything like accuracy and that so long as this was so they had no right to conclude that the disease was incurable. The view that general paralysis of the insane was essentially syphilitic in origin, though held by the majority of neurologists at the present day, had never been proved; it was no more than a hypothesis. Against the essentially syphilitic origin of general paralysis was the fact that many clinicians had seen and reported cases of general paralysis in which syphilis had not previously occurred and that numerous cases were now known in which syphilis was contracted after the onset of the symptoms of general paralysis. The argument used to support the doctrine, "No syphilis, no general paralysis," based upon statistics showing a high percentage of antecedent syphilis in cases of general paralysis, was marred by a constant failure to take into account the fact that only a very small proportion of syphilitics ever became general paralytics or tabetics. Similar statistical evidence could be adduced showing that very high percentages of persons affected by tuberculosis had previously had measles. Indeed, they knew that an attack of measles predisposed to tuberculosis, yet they did not on that ground conclude, "No measles, no tuberculosis." Moreover, the syphilitic hypothesis did not explain the clearly established fact that there were other conditions, such as chronic alcoholism, lead poisoning, and excessive meat diet, which favoured the development of general paralysis. Post-mortem examination of the non-nervous organs or tissues of the body in cases of general paralysis showed that an active bacterial toxæmia was present. Dr. Lewis Bruce and Dr. Robertson had directed attention to the gastro-intestinal disorders that occurred in cases of general paralysis and had published their belief[1] that general paralysis was dependent upon a toxæmia of gastro-intestinal and bacterial origin, but Dr. Bruce had since modified his view so as to regard toxic infection by the bacillus coli as a secondary or terminal infection and not as a primary cause of general paralysis. More recently the hypothesis had been advanced by Dr. G. D. MacRae, Dr. John Jeffrey, and Dr. Robertson himself that general paralysis was the result of a chronic toxæmia dependent upon the excessive development of bacteria not only in the alimentary canal but in the nasal tract and throat, and especially upon the abundant growth of a diphtheroid bacillus which gave the disease its distinctive characters. The recognised causes of general paralysis, such as syphilis, alcoholism, plumbism, and excessive meat diet, acted as stimulants of the leucoblastic tissue of the bone marrow or directly damaged this tissue, so that the defences of the body against the invasion of bacteria were diminished or damaged. The marrow cells (myelocytes) from which the polynuclear leucocytes were derived had a definite limit as regards proliferative capacity, so that after long periods of damage sustained or of excessive proliferation undergone they could no longer generate leucocytes for the defence of the body against bacteria. The protective functions of the body were thus impaired and in such circumstances the bacteria of the alimentary canal, nose, and throat normally present as saprophytes assumed a pathogenic character by reason of the protective forces of the body being weakened. Hence arose a condition of bacterial infection and invasion from the alimentary canal and upper respiratory tract. In such conditions the body, if it desired to survive the invasion of such toxins and bacteria, was obliged to increase its auxiliary defences—that was to say, body cells which ordinarily took only a subordinate part in the destruction of foreign invaders were now roused to active antitoxic or phagocytic functions. It was only in constitutions damaged to this extent that a special toxæmic and saprophytic infection occurred which led to the development of general paralysis. This special infective agent, the one which was dominant in, and was characteristic of, the onset of general paralysis—was a diphtheroid organism—i.e., one resembling the Klebs-Löffler bacillus in culture and morphology, but not identical with it, and the view was advanced that this organism was an "attenuated form" of the Klebs-Löffler bacillus. It had a pathogenic action upon rats. The febrile rises of temperature, the disorders of digestion, the leucocytosis, the chronic sore-throat and septic condition of the mouth observed in general paralytics, and the frequently obtainable evidence of chronic bronchitis all tended to show that the general paralytic was suffering from a bacterial toxæmia. The stomach, throat, and lungs of the general paralytic usually showed evidences of chronic catarrh. The stomach itself might show little or no alteration but the ileum was constantly affected. The tonsils of the general paralytic were frequently enlarged or more commonly they were extremely atrophic. The crypts of the tonsils were filled with pus and the lungs showed evidences of long-standing local bacterial infection. A great development of plasma cells and of "fuchsine bodies" marked such areas of local bacterial infection. These plasma cells were auxiliary defences of the body and their great development

[1] Brit. Med. Jour., June 29th, 1901.

in such localities was an indication that a special call had been made upon them to combat bacterial invasion. Cultures made during life from the nasal and pharyngeal secretions of general paralytics resulted in the development of micro-organisms far in excess of the normal in numbers. A washing from the stomach in one case of general paralysis showed great numbers of bacteria. The septic cystitis to which general paralytics were specially prone was attributable to bacteria absorbed from an unduly septic alimentary canal and excreted by the kidneys in the urine. Cultures were made in post-mortem examination of 20 cases of general paralysis, the nasal or intestinal contents being used for this purpose. In 17 cases out of the 20 the cultures furnished evidence, in addition to other bacteria, of the presence of the diphtheroid bacillus already alluded to, and in the three remaining cases the bacillus was found by other methods of detection. In eight out of the 20 cases this organism was present in very great numbers. A recent series of cultures from the secretions of the nose and throat of ten general paralytics at the Edinburgh Royal Asylum showed that the diphtheroid bacillus was present in nine cases. Out of 16 cases of general paralysis where cultures were made from the brain post mortem four showed the presence of the diphtheroid bacillus. The bacillus in these four cases must have obtained an entry either by the blood or by local infection of neighbouring parts (internal nasal cavities or internal ear). A filamentous variety of the diphtheroid bacillus had also been met with in the lymphatics of the intestines in a few cases and was to be regarded as a terminal infection. The diphtheroid bacillus when introduced into the alimentary canal of rats gave rise to certain morbid symptoms which progressed until death occurred. Changes closely resembling those that were present in general paralysis were met with in the brains of these rats. The changes were observed in the nerve cells and in the non-nervous tissues (blood-vessels and neuroglia) alike. The whole body of facts included in the above investigations therefore supported the view of the specific bacillary origin of general paralysis of the insane.

In the discussion which followed the PRESIDENT stated his belief that in the vast majority of cases and upon the weight of indisputable evidence syphilis was an antecedent of general paralysis. The results of trophic peripheral changes led to secondary catarrhs and bacterial infections (tonsillary, bronchial, intestinal, and a variety of others) in various parts of the body, but these he regarded as natural to the later stages of general paralysis and as non-essential to its causation.

Professor D. J. HAMILTON (Glasgow) mentioned a rare case of bacillary infection of the spinal cord which followed upon a railway accident without external injury in a young girl.

Professor J. G. ADAMI (Montreal) cited evidence to show that bacteria of low virulence and their toxins might have undoubtedly a progressive action upon the nervous system. General paralysis was a chronic state leading steadily to a greater and greater weakness of the body as a whole, favouring what he had termed "sub-infections" of various types, and while prepared to believe that a diphtheroid bacillus might be an accessory factor in general paralysis he would be cautious in accepting it as a specific agent in the production of the disease.

Dr. J. F FLASHMAN (Balmain, Australia) thought the facts brought forward might be of assistance in explaining cases of general paralysis not due to syphilis.

Dr. FLETCHER BEACH (London) inquired whether the bacillus and the lesions attributed to it had been met with in cases of juvenile general paralysis the etiology of which was almost invariably syphilitic.

Dr. F. W. MOTT (London) said he still believed that syphilis was the most important and frequent cause of general paralysis. He inquired whether the diphtheroid bacillus was met with in the very earliest stages of general paralysis. He cited cases of chronic poisoning with abrin and ricin in animals where changes in the brain were produced resembling in many respects those of general paralysis. He also inquired whether plasma cells were present around the cerebral blood-vessels of rats fed on the diphtheroid bacillus.

Dr. W. LLOYD ANDRIEZEN (London) emphasised the etiological and clinical frequency of syphilis and described the changes in the cerebral vessels and meninges in early cerebral syphilis within three years of infection. All stages could be found between these cases and those of general paralysis supervening from 10 to 15 years after infection. There was continuity of symptoms and of pathological lesions between these two classes of affections. He also cited cases of improvement by the "intensive" mercurial treatment of general paralysis. He regarded the diphtheroid infection, like the cystitis of general paralysis, as a subterminal and secondary state not essential to the etiology of the disease.

Dr. MAULE SMITH (Wakefield) had met with a diphtheroid organism in two patients dying from asylum dysentery, but he had not found this organism in general paralysis. He inquired whether this organism was to be regarded as infective from one patient to another.

Dr. DAVID YELLOWLEES (Glasgow) was not disposed to accept Dr. Robertson's views as to the diphthero-bacillary origin of general paralysis in the face of clinical evidence which was overwhelming. He agreed that syphilis was a very frequent but not the sole cause of general paralysis.

Dr. F. EDRIDGE-GREEN (London) believed that syphilis was the cause of general paralysis and of tabes. The patient had in many cases seemed to suffer very little from the immediate effects of syphilis and had led a very steady life afterwards, but nevertheless in 10 or 15 years' time general paralysis or tabes was developed.

Dr. J. HADDON (Denholm) was glad to think that lunacy might be due to a microbe and regarded Dr. Robertson's diphtheroid microbe as a discovery in this direction. He, however, was of opinion that lunacy (including general paralysis) was caused by civilised habits of injudicious feeding and errors of diet and thought that attention to this source might serve to prevent cases of insanity arising from gastro-intestinal disorders and consequent auto-intoxication.

Dr. E. GOODALL (Carmarthen) inquired whether the diphtheroid organism was present in the colon and at the ileo-cæcal valve, where the inhibitory action of the intestinal wall on bacteria was least marked, and whether the brains of rats fed with cultures of the bacillus showed degeneration of the tangential fibres.

Dr. T. B. HYSLOP (London) said that the accumulated work of clinicians all over the world had established syphilis as being the chief cause of general paralysis and he believed that the bacillus of Dr. Robertson was part of a terminal infection occurring in the advanced stages of general paralysis.

Dr. ROBERTSON, in reply, stated that he realised the etiological importance of syphilis, but asserted that the general and local impairment of the alimentary and respiratory tracts, permitting bacterial invasion and toxæmia, constituted the main and the essential constituents in the production of general paralysis.

Dr. R. S. ROWS (Whittingham) read a brief paper on

Cavities in the Spinal Cord,

illustrated with lantern slides. Three different cases were described and illustrated. In the first of these the cavity formation was due to atrophy of the nervous tissue and the neuroglia, in the second to syringomyelia, and in the third to hæmorrhage into the perivascular spaces and substance of the spinal cord.

THURSDAY, JULY 30TH.

Dr. HYSLOP opened a discussion on

Alcohol in its Relation to Mental Diseases.

He considered alcohol in its relationship to physical and mental processes and argued that the rôle of alcohol in the healthy human body was more evil than good and that its use was abuse. In the unhealthy body the use of alcohol was compared to a loan raised at heavy interest which might be employed to cope with immediate and pressing needs but which constituted a heavy burden on the borrower until repayment was completed. Alcohol produced an illusory sense of well-being and of mental energy and capacity without in any way enhancing mental power. On the contrary, even in moderate doses it tended to lower the ability of performing the more complex and difficult parts of any task, physical or mental. It tended to accelerate and to confuse thoughts and ideas without regard to the logic of circumstances and it stimulated the subject to restlessness and to overaction. The vascular system responded to the presence of alcohol by vaso-dilatation and by increased exudation of lymph into the perivascular tissues, and in chronic alcoholism a number of characteristic vascular and perivascular changes were thus set up in the brain. The increased exudation of ymph from the blood-vessels carried

with it an increase in the number of extravasated leucocytes which thereafter underwent rapid destruction and dissolution. Alcohol, moreover, acted deleteriously by absorbing oxygen from the blood corpuscles or from the plasma, for the oxygen thus taken up was necessary for the normal processes of metabolism of the nerve cells. Dr. Hyslop then referred to the neuron theory and to the pathological changes met with in the brain in cases of chronic alcoholic insanity as described by Andriezen, Berkley of Baltimore, and others, and stated that the lesions described by these authors undoubtedly afforded a physical and neurological basis for the clinical symptoms observed in such cases during life—viz., the amnesia, the muscular weakness, and the slowness of reaction time of the chronic alcoholic subject. In conclusion, it was suggested that alcohol *per se* did not cause general paralysis of the insane.

Dr. G. ARCHDALL REID followed with a paper on

Human Evolution with Especial Reference to Alcohol.

Starting from the assumption that all the races of mankind sprang originally from a common stock and that by divergence and progressive change from the original stock the existing races were produced, it was argued that human individuals differed in their power of resisting diseases and that the offspring tended to inherit this parental power or weakness in particular. An example of this was cited in the case of the negroes who as a race were more resistant to malaria than the British, while it was said that *per contra* the British were more resistant than the negroes to pulmonary tuberculosis. "The British, who for thousands of years have been afflicted by phthisis, measles, and whooping-cough, are much more resistant to these diseases than the inhabitants of the Western hemisphere, who have known them only during the last few generations and who are now being exterminated by those diseases." Parental disease, continued Dr. Reid, did not affect in any way, either for good or evil, offspring born subsequently; at any rate, such offspring did not inherit the disease or the good or evil sequelæ of the disease. He challenged anyone to produce genuine instances of so-called "degeneration" of the offspring arising from, or caused by, plumbism, gout, pulmonary tuberculosis, syphilis, or other diseases of the parents. The prevalent belief largely held by the profession that such diseases were actual and potent causes of "filial degeneration" he regarded as an ancient superstition resting on bad observation. The most convincing argument against the popular view was as follows. If parental disease affected the offspring subsequently born then the morbid condition thus reproduced in the offspring would be a congenital one and such congenital morbid conditions would, according to biological law, be transmitted to the descendants of the said offspring. "Under such conditions," continued Dr. Reid, "a race afflicted by any disease would undergo rapid degeneration and ultimate extinction. We know that this is not the case." People differed in their susceptibility to the "charms" of alcohol; those who craved most strongly for alcohol were those whom alcohol affected most intensely and pleasurably. Moderate drinkers, on the other hand, did not have this craving. People drank, as a rule, in proportion to their desires. The greater the internal craving the greater was the temptation to excessive indulgence and the greater would be the mortality of such persons. Published statistics on parental alcoholism and on its effect on the offspring were untrustworthy because the various sources of error were not taken into account, and most observers were, continued Dr. Reid, prejudiced in favour of a preconceived theory. If the offspring of alcoholic parents were affected by degeneration then races or families which had long abused alcohol should be degenerating and tending towards extinction. The Jews, Greeks, Italians, Spaniards, Portuguese, and South Frenchmen, who as races had long been addicted to alcohol, should then *ex hypothesi* teem with degenerate and effete individuals the result of ancestral alcoholism. Yet the evidence was very clear that these races did not teem with such products and that they were at present the most temperate (and *ipso facto* non-degenerate) people on earth. Drunkenness in the ancestry was the cause of temperance among the descendants; hence the progeny of drunken parents tended, after the lapse of generations, to become temperate men and women with no craving for alcohol. Dr. Reid then briefly touched upon the use of opium in Eastern countries and concluded by enunciating the proposition that repressive legislation against alcoholism was useless among civilised nations. It had been tried on hundreds of occasions during thousands of years and had universally failed except among the Mahomedans and with them success was only partial.

Dr. CHARLES A. MERCIER (London) referred to the enormous value of alcohol as a stimulant in states of exhaustion and as a hypnotic in many cases of insomnia. He did not believe in the possibility of correlating specific changes in the structure of the brain tissue with changes in consciousness, for how could the structural change, he argued, help us to understand why the patient in whose brain they occurred suffered from a delusion of persecution or a mnemonic delusion? No research into structural change would ever explain such phenomena. Dr. Mercier then proceeded to criticise at some length several of the propositions laid down by Dr. Reid. As regards the inheritance of acquired characters which Dr. Reid opposed he (Dr. Mercier) could, like all physicians experienced in mental disease, adduce numerous instances showing that alcoholism of the parents affected the offspring deleteriously, but he was aware that Dr. Reid evaded the consequence of such facts by stating that the morbid conditions seen in the offspring were not the result of alcoholism in the parents but were the outcome of other causes.

Dr. YELLOWLEES said that the effects of alcoholic indulgence varied especially with the temperament of the drinker. Some men never suffered from delirium tremens however long or deeply they drank, others became insane after but brief indulgence, others continued habitually "soaking" until the suspicions and hallucinations of chronic alcoholic insanity manifested themselves, while others did not manifest even these but sank gradually into chronic alcoholic dementia. He had noticed climacteric melancholia as a result of drinking habits indulged in early life—a heavy penalty paid for the errors of youth.

Dr. T. N. KELYNACK (London) referred to the importance of recognising the occurrence of auto-intoxication and to the remote and indirect "secondary infections" predisposed to by alcoholism. He thought that the morbid psychology of alcoholism would be a fit subject for collective investigation.

Dr. EDRIDGE-GREEN said that in discussing the transmission of acquired characters a distinction should be drawn between those characters which were acquired through the desire of the individual and those which were accidental, like the loss of an arm.

Dr. A. T. SCHOFIELD (London) thought that Dr. Reid had revived an old fatalistic theory which was believed to be dead. Tendencies to disease were inherited, but some tendencies of this nature might be resisted and overcome by hygiene and to this category belonged some of the evil tendencies transmitted to the offspring of alcoholic parents.

Dr. J. J. RIDGE (London) said that several of the links in a chain of argument might be correct though the conclusion might be absurd. Already life assurance societies were awakening to the fact that alcoholic indulgence, even in moderation, produced degeneration of tissues in the individual which showed itself at or about the age of 60 years.

Dr. FLASHMAN thought that the view held by some biologists that the germ plasma was uninfluenced by the environment could not be sustained on medical grounds. Changes in the nutrition of the body affected the blood plasma and the germ plasma. Dr. Reid neglected to take into account the many counteracting influences at work which mitigated the bad hereditary effects of parental disease, including parental alcoholism. He could not agree with Dr. Hyslop's statement that alcohol restored the nerve energy temporarily and he regarded the theory of amœboidism of the neurons as discredited.

Dr. FORD ROBERTSON said that he would go farther than Dr. Hyslop in attributing importance to the effects of alcohol in damaging the defensive forces of the body generally and locally and in thus opening up avenues for the invasion of bacteria. He regarded Dr. Reid's 16 propositions as bristling with fallacies. On general physiological grounds they were justified in regarding the germ cells as affected by nutritional conditions as other cells were. The onus of proof that the cells were unaffected by nutritional disturbances (alcohol and other toxic agents diffused in the blood plasma) lay with Dr. Reid. He awaited with confidence the further accumulation of evidence on this point, as he was convinced that alcohol affected the germ and sperm cells and was a potent factor tending towards the degeneration and death of the offspring thus affected.

Dr. ANDRIEZEN (London) said that alcohol acted on

the tired brain as a spur on a jaded horse. It did more damage to the nervous centres than simple fatigue would cause. It also deprived the tissue of the oxygen necessary for its metabolism. He had ample and indisputable evidence to prove that the "thorns" and "gemmules" of the cortical nerve cells, both human and animal, were normal structures. He referred to researches published by him in 1894 on alcoholic insanity in which a correlation was shown to exist between cerebral changes in the nerve cells and fibrils on the one hand and such clinical symptoms as muscular weakness and tremor, amnesia, and slowness of reaction time on the other. He believed that Dr. Reid's views were founded on a misconception of Weismann's theory of the so-called "isolation" of the germ plasma and adduced evidence from cases of idiocy and imbecility and from the investigation of the "Jukes" family showing that deep and far-reaching degeneration of descendants resulted from the alcoholism of parents.

Dr. HEYWOOD SMITH (London) had observed a characteristic symptom in female inebriates—viz., lying—and inquired whether it was common in cases of alcoholic insanity.

Dr. FLETCHER BEACH referred to a conjoint inquiry carried out by him with Dr. G. E. Shuttleworth a few years ago, as the result of which he concluded that idiocy and imbecility were common and frequent in the offspring of alcoholic parents. A man or woman who had "soaked" freely in alcohol for years could not be regarded as having sound and healthy germ cells or sperm cells. He believed that public opinion should be enlightened before repressive legislation was proposed, and when the morals of the nation were elevated there would be little need for such legislation.

Dr. WILFRED J. HARRIS (London) said that alcohol was not a strength-sustaining agent and was discarded by men training for swimming long distances or other feats of prolonged neuro-muscular work.

Mr. JAMES STEWART (Clifton) stated that in his experience nearly 40 per cent. of neurotic patients who had been under his care during recent years owed their disease to parental alcoholism.

The PRESIDENT, in summarising the subjects discussed, pointed out that the marked amnesia of chronic alcoholism, as well as the marked retardation of reaction time, were due to fine cerebral lesions affecting the cortical neurons. He could not accept Dr. Reid's view that alcohol did not prejudicially affect the germ plasma. As regards the right use of alcohol he felt that under the control of the reasoning and moral faculties the use of alcohol was in certain conditions advantageous.

Dr. HYSLOP and Dr. REID then briefly replied to the criticisms and comments made on their respective papers.

Dr. ALICE N. V. JOHNSON and Dr. GOODALL communicated a joint paper on

The Action of the Blood Serum from Cases of Mental Disease upon the Bacillus Coli Communis.

Starting from the view, now generally accepted, that excessive growth of intestinal bacteria might occur when the inhibitory action of the intestinal wall on bacteria was diminished, it was argued that excessive growth of the bacillus coli communis might especially be looked for in states of reduced health commonly associated with the progress of mental disease. Blood from 25 cases of insanity of various kinds was taken. Of these 11 were cases of acute mania, five were cases of melancholia, two of delusional insanity, one each of puerperal insanity, climacteric insanity, recurrent mania, and alcoholic insanity, and three were cases of general paralysis of the insane. Blood serum was prepared from each case and its action was tested upon cultures from mixed strains of the bacillus coli communis in order to ascertain whether, by the demonstration of agglutination, direct evidence could be adduced of the morbific influence of the said bacillus in such cases, or whether indirect evidence of the like nature could be obtained of the influence of other organisms related to the bacillus coli communis. The results of these experiments, which were cited in detail by Dr. Johnson, showed that agglutination was present in 60 per cent. of all the cases, such agglutination being good in 28 per cent. and only partial in 32 per cent. of the cases. Enumeration of the leucocytes was also practised in 13 cases of various forms of insanity, the blood being investigated once a week for a period of 14 weeks. The highest number of leucocytes was found in cases of acute mania, and in these and all other cases the leucocytes were found in largest numbers when the patients were passing through acute states of insanity, the numbers falling to half or less during states of remission or of recovery. These experiments and observations tended to show that bacteria played an important part as toxic agents in the acute stages of some varieties of insanity and that leucocytosis was a valuable indication of states of exacerbation, of recovery, or of remission.

PATHOLOGY.

FRIDAY, JULY 31ST.

Mr. K. W. GOADBY (London) opened the proceedings with a demonstration and a short paper on

The Use of a System for keeping Records of Bacteriological Investigations.

He employed cards of two kinds: small ones for recording each investigation made and which formed a kind of journal and large ones on which the information gained from these was tabulated. This arrangement, as well as the tabular form printed on the cards, was the outcome of many trials. The cards were kept filed in drawers, were compact, easy for reference at any time, and cross references and comparisons were easily made. Guide cards of a different colour, blank, but with a projecting piece for a name, served to indicate groups of cards.

The PRESIDENT, Professor D. J. HAMILTON (Aberdeen), made some remarks in praise of the system and then as Dr. I. WALKER HALL (Manchester) was unavoidably absent his communication on

The Purin Bodies of Human Fæces in Health and Disease

was read by one of the secretaries of the section. Observations by various people had established the fact that nuclein was known to be excreted by the bowel. Only very slight traces of free purin bodies had been found and uric acid never. To determine the amount of fæcal purin excreted by different individuals under varying conditions necessitated the maintenance of a fixed diet. The fæces were taken in periods of six days. By the process employed the total purin bodies were finally obtained as silver compounds. An aliquot portion was taken for estimation of the total purins and the remainder was subjected to a special process for the separation of the individual purin bases. Up to the present 40 studies had been made upon three individuals. They showed that upon the same diet, even at intervals of three and six months, the same individual excreted daily practically equal quantities of purin bodies in the fæces. These amounts were least upon a milk diet—i.e., purin-free food—and most upon a vegetable diet. The intermediary position was held by the mixed diet. When large doses of pure hypoxanthin and xanthin were added to the food the fæcal purins were not increased. The administration of 0·5 gramme of guanin led in one subject to a marked increase—about 60 per cent. reappearing in the fæces. In another person guanin was better absorbed but still a large amount was excreted in the fæces. 500 grammes of pancreas gland caused an increased excretion of purin and only about 60 or 70 per cent. of the total quantity was absorbed. The quantitative separation of the fæcal purins showed that guanin, adenin, xanthin, and hypoxanthin were always present. About one-half of the total quantity was represented by guanin, one-quarter by adenin, and about an eighth each by xanthin and hypoxanthin. It was probable that any guanin which occurred in a free state in the alimentary tract was oxidised to xanthin. In ordinary circumstances it was improbable that any of the food purins were voided by the fæces. When the dietary contained large amounts of nucleins, as, for instance, in sweetbread, it was possible that only a certain proportion was decomposed or absorbed and the remainder would appear in the fæces. The figures obtained suggested that there was a distinctly personal factor in the absorption of nuclein and its derivatives. There was little doubt that in experiments upon general metabolism the fæcal purins should always be estimated, although from a clinical standpoint their slight variations might be neglected. An attempt to isolate nuclein from the fæces in a sufficiently pure condition for elementary analysis had so far not yielded successful results because of the difficulty of an entire removal of the mucin. The presence of guanin, adenin, xanthin, and hypoxanthin in the fæcal nuclein suggested an origin from the cell nuclei of the intestinal mucous membrane, but it was possible that

the pancreatic juice might contain some free guanin. In diarrhœa and inflammatory conditions of the mucous membrane the purin bodies were increased. In a case of subacute rheumatism they had been unaltered in the acute attack, a subacute attack, and during convalescence six months later. In the normal adult the fæcal purin yielded daily about from 0·01 to 0·023 gramme of nitrogen (from 0·025 to 0·0575 gramme of xanthins), a very small amount in comparison with the 0·16 gramme of nitrogen (0·58 gramme of uric acid and xanthins) passed in the urine on a purin-free diet. It was known that a small quantity of nucleo-albumin might be met with in the urine and that it arose from shed epithelium; similarly a certain amount of nucleo-albumin must be daily shed by the bronchial, pharyngeal, and nasal membranes. The remaining tissue cells passed their decomposed nuclein into circulating fluids of the body. It was obvious that in all inflammations the excretion of purin would be increased. Dr. Hall thought that these facts indicated the general absorptive and selective faculty of the intestinal epithelium of an individual whose factor had been attained and would assist in the determination of dietaries and therapeutic measures.

Professor SENATOR (Berlin) spoke a few words on the subject and then one of the secretaries read a paper on

A New Method for the Determination of Uric Acid in Urine,

by Dr. A. F. DIMMOCK (Harrogate) and Mr. F. W. BRANSON, F.I.C., F.C.S. (Leeds). They had devised the following method which had been found to work easily. 100 cubic centimetres of the urine were taken and warmed to about 40° C. and then saturated with 31 grammes of chloride of ammonium, the whole being well shaken in a stoppered measuring glass graduated in 100 cubic centimetres until complete solution of the chloride of ammonium was effected. The contents would then be at a temperature of about 15° C. and should be left for at least two hours (preferably 12) for the precipitate of urate of ammonium to subside. Should any of the precipitate have a tendency to remain near the surface a gentle rotation of the measuring glass would cause it to settle. The supernatant liquid was poured off and the portion left was to be carefully filtered through a small filter paper (diameter about 5·5 centimetres), as by Hopkins's method. The precipitate was carefully washed with a very dilute solution of ammonia, consisting of 1 part of strong solution of ammonia in 1000 parts of distilled water. The precipitate was best washed in the following manner. The liquid was allowed to drain from the precipitate and the filter paper was then filled with the dilute ammonia solution contained in a wash bottle. This was allowed to drain off and the filter paper was again filled with the ammonia solution. This operation was to be repeated a third time. Some of the filtrate was tested with a 5 per cent. solution of nitrate of silver acidulated with nitric acid 5 per cent. Only a very slight precipitate should be given, indicating the absence of any appreciable amount of chloride of ammonium, but if the filtrate still contained this salt it should be washed with a small additional amount of dilute ammonia. The precipitate with the filter paper was placed in the generating bottle of a special nitrometer, the tube being filled up to the mark (25 cubic centimetres) with the hypobromite solution and lowered into the bottle by a piece of string. The temperature of the hypobromite solution was noted; it should approximate to that of the room in which the estimation was to be made. The cork was now placed in the generating bottle and the bottle was plunged in a vessel of water of a temperature similar to that of the hypobromite solution. After two minutes the water level in the measuring burette was adjusted to zero and the apparatus was tested to see that there was no leakage. Finally, the generating bottle was tilted to allow the reagent to flow out of the tube and reaction between the hypobromite of sodium and urate of ammonium was promoted by shaking. After ten minutes the water levels were adjusted to equilibrium and the percentage of uric acid was read off as indicated by the nitrogen evolved. The burette used was graduated specially from the results of numerous determinations and the method seemed to be quite suitable for proportions of uric acid ranging from 1 in 1000 to 1 in 10,000. By the addition of a second scale to the burette the instrument could be used as a ureometer.

Dr. G. L. EASTES (London) remarked that the method appeared to be very satisfactory (if the graduations on the burette were to be relied on) in that it shortened the time taken in estimating uric acid by Hopkins's method by from four to six hours.

Dr. F. G. BUSHNELL (Plymouth) read the last paper on

The Differential Leucocyte Count and Estimation of the Leucocytes in 41 Cases,

including 20 cases of malignant disease, three of leukæmia, two of Hodgkin's disease, two of beri-beri, one of blackwater fever, one of malaria, one of (?) Addison's disease, and one of hypertrophic cirrhosis of the liver. Besides the paper giving Dr. Bushnell's remarks on the cases a table was added containing details of the blood counts.

Dr. E. R. CARLING (London), in the course of some remarks on this paper, stated in regard to a series of cases of appendicitis in which he had counted the leucocytes that in those cases where the leucocyte count had amounted to 20,000 per cubic millimetre pus was found at some time or other either before or after, but that pus was not found in any of those cases in which the leucocytes were less than 20,000 per cubic millimetre.

After some concluding words by the PRESIDENT of the section the meeting came to an end.

In addition to the papers, discussions, and lantern demonstration the section provided a pathological museum containing more than 120 macroscopic pathological specimens, many of them of very great interest, which were lent from various institutions or by private individuals, besides a valuable series of radiograms, photographs, and drawings of pathological conditions and about 30 microscopic specimens. Dr. D. E. Evans (Swansea) and Dr. Newman Neild (Bristol) were responsible for the excellent arrangement of the museum.

OPHTHALMOLOGY.

FRIDAY, JULY 31ST.

Mr. GUSTAVUS HARTRIDGE (London) opened a discussion on

The Treatment of Convergent Squint.

He said that the treatment of concomitant convergent strabismus in a scientific manner could only be approached by the consideration of the various factors which helped to produce the disorder and by a careful examination of every case so that the value and importance of each factor might be ascertained. It was known to all that concomitant convergent strabismus was a condition affecting both eyes, a binocular defect, and the result of excessive innervation of the internal recti muscles excited by the associated act of accommodation. The factors which assisted in the production of squint were: (1) hypermetropia; (2) imperfect development of the fusion faculty; (3) defective visual acuity in one eye; and (4) the anatomical position of rest of the eyes. These various factors did not play the same part in every case; they might not all be present, hence a careful and systematic examination of each case was essential. The objects to be obtained by treatment were: (1) the correction of the deformity; and (2) establishment of binocular vision for all distances. He divided the treatment into three classes: optical, orthoptic, and operative. The importance of an exact optical correction was beyond all question and in many cases resulted in a complete cure. Orthoptic exercises were of great value in many cases but must be commenced early. They consisted of: (1) covering up the fixing eye for a certain time daily; (2) practice with a stereoscope or one of the special instruments devised for this purpose, such as Mr. Priestley Smith's "heteroscope" or Mr. C. A. Worth's "amblyoscope"; and (3) bar reading. The optical and orthoptic treatment must be faithfully carried out for 12 months before any operative treatment could be entertained. When an operation had been decided upon they had to decide what operation should be undertaken. They had at their disposal four operations: (1) simple tenotomy of one or both eyes; (2) simple advancement; (3) tenotomy with advance of the opponent muscle; and (4) stretching of one of the muscles. The chief points on which he invited discussion were: (1) when was an operation necessary or justifiable? and (2) what operation gave the best results? In his view the conjunction of tenotomy of one muscle with advancement of the other gave the best results; he was distinctly adverse to operating on both eyes at the same sitting. As to the age for operation, that must be determined by the condition of the field of vision in the divergent eye. They had always to bear in mind the deformities produced by operation, sunken caruncle, limitation of movement, alteration of width of palpebral fissure, and the like; each case had to be considered in view of these after-effects. They had also to bear in mind that squints

did disappear in time, though at the cost of amblyopia of the one eye.

Mr. CLAUD A. WORTH (London), who had given notice of reading a paper entitled "Methods of Preserving or Restoring the Vision of the Deviating Eye and Developing the Fusion Sense," read the paper as a contribution to the discussion. He laid stress on the necessity of exact optical correction in squint cases; in his experience no child was too young for glasses; in exceptional cases he had found them tolerated at as early an age as three months; of course, under such conditions special precautions had to be taken in the fitting of the frames. His experience had convinced him that amblyopia pure and simple was the result of disuse and that the loss of vision could be recovered from by proper training. It was essential to begin early and to make the exercises attractive. This he thought he had attained in the device of his "amblyoscope." The object of fusion training was not to cure the squint, though this in exceptional cases might result directly, but it was directed to the revival of the suppressed vision of the deviating eye. In 193 cases of convergent squint which had lasted one-eighth of the children's lives he obtained after treatment 165 cases of perfect vision; in no case was the power of fixation lost. As regards operation, if the fusion was rapidly developed he had no hesitation in operating early, so that the growth of the fusion sense was fostered by the renewal of the proper balance of the muscles; in such cases there was little or no danger of secondary deviations.

Mr. J. TATHAM THOMPSON (Cardiff) agreed with Mr. Worth that the sooner optical correction could be given the better for the deviating eye; he had, however, never had the opportunity of giving glasses at an earlier age than about two years. He had not had much experience of fusion tubes but had found stereoscopes of little use. As regards the nature of the best operative treatment, he thought the frequency of performance of simple tenotomy had declined, yet in some cases it was a justifiable procedure and the results were satisfactory. He did not think it wise to operate on both eyes at one sitting; it was preferable to keep the sound eye in reserve until the effects of the interference with the deviating eye had been observed. After seeing Professor Landolt operate in Paris he had become a thorough believer in the method of advancement by splitting the tendon; he never removed any part of the tendon. He thought highly of Mr. Worth's method of diminishing the use of the sound eye by the long-continued instillation of atropine so as to compel the deviating eye to be exercised for near vision; it enabled the weak eye to be exercised without dependence on nurses and teachers.

Dr. E. E. MADDOX (Bournemouth) said that he agreed with both Mr. Hartridge and Mr. Worth in their general enunciations. He had not had much opportunity for the practice of orthoptic training except in the rather later ages when the results obtained were not brilliant.

Mr N. BISHOP HARMAN (London) drew attention to a remarkable instance of anticipation of their present knowledge of the development of the fusion faculty in young children. Pepys in his famous "Diary" recorded a talk with the doctor of the ship which brought Charles II. from his exile; the doctor informed him "that children when they are young do use their eyes severally to look in any direction, but as they grow they learn to use them so that they have but one eye." Mr. Harman thought that they could not over-estimate the importance of the proper recognition of the fact that the attainment of binocular vision both in the individual and in man as one of the higher animals was of recent date. Comparative anatomy had shown that lately developed organs and faculties were those most easily lost in adverse circumstances. And in some eyes almost trifling errors of refraction or opacities in the refracting media easily destroyed the recently acquired and delicate balance of binocular vision.

Dr. A. DARIER (Paris) said that he did not believe in congenital amblyopia, except in circumstances of damage to the fundus oculi; he thought it was due to an avoidable suppression of vision. It was his practice never to operate on two eyes at one time. As regards the preference for tenotomy or advancement, he pointed out that the eyes in these cases of squint were often of odd sizes, the converging eye being usually the smaller; in such circumstances it was a positive advantage to produce an increase in the width of the palpebral fissure and so enhance the apparent size of the eye by the operation of tenotomy.

Dr. R. A. REEVE (Toronto) agreed in the importance of early treatment; the baby patient seemed to appreciate the improved vision afforded by glasses. He never operated before the age of six years and only on one eye at a time. He drew attention to the importance of accurate adjustment of the advanced muscle in view of the frequent production of hyperphoria by ordinary methods. He strongly recommended the method of tucking the redundant piece of tendon under its insertion and not cutting it at all.

Mr. F. M. GRANGER (Chester) concurred in these observations.

The PRESIDENT (Mr. H. E. JULER, London) said that the emphasis of the discussion lay in the recognition of the need for the development of the dormant fusion faculty in the subjects of squint. His views of the possibility of the accomplishment of this had become much more hopeful since he had read Mr. Worth's recent book on the subject. There was no doubt that the failure to get good results arose from the neglect to take the cases sufficiently early. His experience of the temporary repression of the acuity of the sound eye by the instillation of atropine into that eye alone was excellent. As regards operative treatment, the practice of simple tenotomy was not to be wholly condemned; in some cases it was a very simple and most excellent operation. In looking over his old cases where even double tenotomy had been practised he found very good results. There was doubtless some loss of convergence, yet there was sufficient for all ordinary needs. The practice of simple advancement had the countervailing disadvantage of producing enophthalmos.

Mr. W. T. LISTER (London) questioned the advantage of early operation in these cases. Advancement needed general anæsthesia for its performance in young subjects and it was not possible to be sure of a good adjustment when the eyes were wandering under the influence of the anæsthetic.

Mr. HARTRIDGE, in replying, said that he had never given glasses so early as Mr. Worth; he thought one year old to be the earliest age advisable. He agreed that the use of atropine in the sound eye alone presented much advantage. The methods of splitting the muscle or of folding the redundant tendon he had tried.

Mr. WORTH also replied.

Mr. THOMPSON read a paper on

The Fixation of the Eyeball during Operation.

He pointed out the tendency of the eyes to turn upwards under cover of the upper lids so that there was a direct opposition to the downward traction of the fixation forceps. This tended to produce gaping of the corneal incisions. He had found great benefit by fixing the eye by means of two silk sutures applied over the sites of the internal and external recti; by the manipulation of these "reins" the movements of the globe could be completely controlled without any tendency to an increase of tension or a distortion in the anterior segment of the globe, so that sections here did not gape.

Mr. W. M. BEAUMONT (Bath) pointed out that he had devised a two-pronged fixation forceps with this idea in view; it was made by Messrs. Down.

Mr. H. C. ENSOR (Cardiff) narrated a case in which he had practised

A New Operation for Congenital Ptosis.

The case was that of a young girl with unilateral ptosis of marked degree. He had incised the tissues of the upper lid to the periosteum of the frontal bone; then by the use of the cautery he had produced scarring and adhesion of the tissues of the lid to the periosteum. After this procedure the lid was found to be satisfactorily suspended, whilst the eye could be closed by the upward movement of the lower lid.

Mr. THOMPSON said that he had seen the case referred to; the lid was distinctly elevated, but he feared there would be undue exposure of the globe during sleep.

Major H. HERBERT, I.M.S., made a communication in regard to

The Pathology of Spring Catarrh,

illustrated by microscopic sections. He described a hitherto unnoted eosinophile infiltration of the tissues and the presence of minute vesicles in the epithelial layers of the pedunculated growths which were also filled with the eosinophile cells. He further noted that in the examination of the blood of the subjects of this complaint there was an increase in the eosinophile count of from 10 to 20 per cent., but he added that it was not certain whether this might not be due to the presence of the grosser blood parasites with which the patients were infested.

Mr. DEVEREUX MARSHALL (London) said the observation of the eosinophile condition of the blood in cases of spring catarrh was of interest; if it could be substantiated for all cases it would provide a certain mode of differentiating a rather obscure condition.

Major HERBERT also made a further communication on the subject of the

Superficial Punctate Keratitis of Bombay.

He said that since his earlier communications on the subject he had come to the conclusion that the affection was endemic in Bombay; it was most prevalent after the rains in warm weather; the association of conjunctivitis with the condition was marked. In some film preparations of scrapings of the cornea he had been able to demonstrate an organism, probably an encapsuled bacillus; the observation was difficult to follow out since the organism could not be cultivated.

Dr. ADOLPH BRONNER (Bradford) described a

Modified Mules's Glass Ball for Use after Removal of the Eyeball.

He remarked that the ordinary Mules's globe in some cases worked its way out from between the muscle stumps. He had had globes prepared with tunnels stretching from the poles; by this means he was able to connect sutures passing through the tunnels of the globe with the sutures securing the stumps of the muscles. He considered that he obtained a more mobile and prominent stump.

Mr. N. BISHOP HARMAN (London) read a paper on

Knee-jerk Phenomenon in Interstitial Keratitis.

He said that his attention had been directed to the subject by some remarks on a case shown at a meeting of the Ophthalmological Society last year. A paper giving an earlier investigation had been published in the Ophthalmic Hospital Reports of 1888. The authors of that paper examined 62 cases and arrived at the following conclusions: (1) that in 30 per cent. the knee-jerks were distinctly diminished; (2) that in 10 per cent. the jerk was absent; and (3) that the jerk was rarely if ever exaggerated. Mr. Harman described the mode of making the examination which he had adopted; he considered this mode enabled him to get rid of the personal equation in great measure, it afforded a standard scheme of varieties, so that results could be checked by others. In all he had examined 100 cases, many of them on several occasions; and as a means of comparison 100 healthy individuals of similar age and sex had been examined. On comparing the results obtained it was found that the condition of the reaction in the subjects of congenital syphilis and in health was almost identical. On general grounds he pointed out that this was what might be expected. In acquired syphilis it was probable that, as in other general conditions—e.g., starvation—the tissues were affected unequally, and the higher nerve centres latest; until such time the conducting paths, which would exhibit a diminished resistance and reparative power, would be subject to the strain of active and perhaps exaggerated cerebration and tend to degenerate (tabes dorsalis). On the other hand, in congenital syphilis the whole system, higher and lower centres, was developed under the continuous influence of the poison; it was therefore unlikely that with the feeble cerebration of a more or less degenerate brain the conducting paths would be subject to strain. He thought this argument accounted for the fact that tabes dorsalis was the common result of nerve changes in acquired syphilis and mental degeneracy that in congenital syphilis.

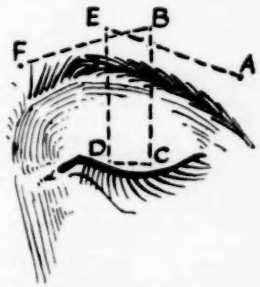
Mr. R. W. DOYNE (Oxford) said the question interested him considerably, as he had recently examined the knee-jerks in a series of 32 cases of congenital syphilis. In the majority the reaction was normal, in no case was it absent, though there were a few in which reinforcement was necessary.

Mr. BEAUMONT said he also had in the last few months undertaken a similar investigation; he had examined 15 cases in each of which the knee-jerk was normal.

Mr. HARMAN also read a paper on

An Improved Method of Operation for the Relief of Ptosis Palpebræ.

Present methods might be summed up under three groups: (1) attachment of the drooped lid to the superior rectus (Motais), in some respects an ideal proceeding but one which commonly failed by producing diplopia and leaving the globe exposed when upturned in sleep; (2) plastic operations such as that of Panas which had the disadvantage that in the not uncommon event of failure scars were added to the patients' already marred features; and (3) the provision of an artificial fronto-palpebral elevator by attaching the frontalis muscle to the lid margin by a wire, the device of Mules. This was the most practicable method, but it had the objections of requiring the splitting of the lid margin, causing a permanent stiffening of the lid so that it could not be subsequently everted, leaving an irritating knot above the brow, and the wire being smooth and unsociable remained a foreign body and liable to expulsion. Mr. Harman had overcome these objections by the adoption of a fine gold *chain* of great strength, slenderness, and flexibility. The operation gave rise to no other damage to the tissues than that of the needle punctures. He relied for fixity of the loop by burying deeply lengths of the chain above and parallel to the brow. He believed the growth of connective tissue around and within the links of the chain would foster the production of a veritable connective tissue tendon so that the artificial support of the chain would be of secondary importance. In placing the chain in position it was attached to a "triangular four inch needle" by a soldered link or a knotless silk loop; the method of emplacement can be followed by reference to the diagram.



There were on exhibition a series of specimens of Pathological Conditions of the Eye by the PRESIDENT; a number of drawings of the Fundus Oculi in Tuberculous Choroiditis by Mr. SYDNEY STEPHENSON; and some Instruments for Clinical Observation—a Simple Perimeter in large and portable models, a Refractometer, and a Scotometer—by Mr. BISHOP HARMAN.

DISEASES OF CHILDREN.

FRIDAY, JULY 31ST.

Dr. G. CARPENTER (London) read a paper on

A Case of Syphilitic Nephritis in an Infant aged Five Months.

Both parents had been syphilitic. The patient was the fourth child and had been born at the eighth month. The infant soon developed many of the typical signs of inherited syphilis. Soon after admission the urine was found to be very little in quantity and contained a considerable amount of albumin. The child died. The kidneys were found to be in a condition of catarrhal nephritis by microscopic examination and there were no interstitial changes. It would therefore seem that catarrhal conditions in the renal tissue could arise from the syphilitic poison.

Discussion on Tuberculosis in Children and its Relationship to Bovine Tuberculosis.

Dr. NATHAN RAW (Liverpool) stated that he agreed with Koch that human and bovine tuberculosis were distinct diseases, although a similar bacillus was found in each. He believed strongly that bovine tubercle could be transmitted to man, although human tubercle could not be conveyed to cattle. He considered that nearly every case of pulmonary tuberculosis was due to direct infection from man to man but that many instances of abdominal tuberculosis in young subjects were in reality due to infection with bovine tubercle. The post-mortem appearances in both young infants and calves dead from tubercle were also identical. In tabes mesenterica he believed that every case would show that the child had been fed for some time on cow's milk. It would seem that although pulmonary tuberculosis in adults was on the decrease in England tubercle of the abdomen in young subjects had distinctly increased; also that tuberculosis in English cattle was on

the increase according to the statements of competent veterinary surgeons. As a rule infection probably occurred from bovine tubercle bacilli passing through the intestinal wall. Then the mesenteric glands became affected and afterwards the retroperitoneal glands. When these cases were examined bacteriologically it would be found that although the actual bacillus appeared to be the same as that which was present in the pulmonary tubercle of adults, yet the culture growth was quite different. The growth corresponded exactly with that from bovine tubercle and was entirely distinct from that which was derived from human tubercle. With regard to the tuberculosis of cervical glands in children, again he thought that they depended upon an infection with bovine tubercle through the tonsils and the naso-pharynx. It would appear likely that the bovine tubercle bacillus was very virulent so far as young subjects were concerned, but that it had but little action upon adults and that the tubercle bacillus of the adult human being was not so virulent to children. Further, it might be that an infection with the bovine organism protected from future infection with the human bacterium. In cases of tuberculous meningitis he was sure that there might be the meningeal condition without any other signs of tubercle and he considered that there might have been direct infection of the meninges through bacilli having gained entrance from the pharynx into the blood stream.

The PRESIDENT (Mr. W. ARBUTHNOT LANE, London) congratulated Dr. Raw on the clear manner in which he had stated his conclusions. He thought that in many cases of tubercle in children, including tuberculous meningitis, there had been a previous traumatism, for it was rare for the bacillus to infect wholly healthy organs. Glands in the neck might first have been infected with some other bacterium and then with the tubercle bacillus. In abdominal tuberculosis again there was usually a previous history of intestinal disturbance.

Dr. D. A. REID (Tenby) considered that it was the duty of every medical man to render all the aid in his power to the elucidation of the question of infection. He drew attention to the fact that the natives of India and even their children were peculiarly free from tubercle, while European residents there and their offspring were very liable to the disease and he believed that this was due to the fact that the native eschewed beef and cow's milk and only partook of goat's milk, the goat, perhaps, being the animal least likely to be attacked with tubercle.

Mr. JOHN MACKENZIE (Kirkby-in-Ashfield) had seen one case of tuberculous disease of the nipple in a woman, but she did not give her offspring tubercle. He considered that most cases of tuberculous meningitis were preceded by disease of the middle ear.

Dr. THEODORE FISHER (Bristol) thought that the reason why children suffered so much more than adults from tuberculous glands in the neck was not that they were more susceptible to bovine tubercle but because all adenoid tissue in the young was very prone to be inflamed. Again, he believed that abdominal tubercle might arise from a bronchial infection, for the secretions, in the tubes might swarm with tubercle bacilli. He did not believe in the ascending spread from the abdominal to the thoracic cavity.

Mr. C. G. HIGGINSON (Birmingham) stated that experiments on human subjects with bovine virus were constantly being made, for much milk drunk was tuberculous. Dr. Raw had again put the profession on its guard against milk and, he considered, rightly so.

Dr. W. L. SYMES (Dublin) did not like the term "tabes mesenterica." He considered that there were three varieties of abdominal tuberculosis: one in which the peritoneum alone was involved; the second in which only the mucous membrane of the bowel was diseased; and the third—a rare form—in which the mesenteric glands alone were affected. This last was the only one that deserved the term of "tabes."

Dr. E. CAUTLEY (London) admitted that he believed that bovine tuberculosis might occur in children, but he was sure that it was very rare and that infection with human virus was much more common. He considered that the expression "tabes mesenterica" should be dropped at once. He believed that tubercle in cattle was not so frequent as was thought. He considered that the bulk of it was found in pedigree cattle and those kept in towns. He was sure that the bronchial glands were even more frequently infected than the abdominal glands. Acute tuberculosis was rare in children except when it occurred in the lungs. He thought that condensed milk as an article of diet tended to make children susceptible to tubercle.

Dr. CARPENTER (London) said that he had seen cases of so-called "tabes mesenterica" in children who had been fed entirely upon breast milk.

Mr. W. MCADAM ECCLES (London) expressed his conviction that a large number of cases of tubercle in children were the outcome of a primary infection with another organism which paved the way for the tubercle bacillus. This was particularly so in the case of the cervical glands.

Dr. RAW, in his reply, referred to the very complex nature of the subject and reaffirmed his conviction that there were many cases in which the tuberculous infection spread from the abdomen to the thorax. With regard to Swiss condensed milk, it must be remembered that until lately this in itself was a source of infection in all probability, containing as it did some years ago many tubercle bacilli of the bovine form.

Adenoid Vegetations in Infancy.

Mr. R. C. DUN (Liverpool) wished to draw attention to the possible existence of adenoids during the first year of life. Some instances would appear to be truly congenital, symptoms referable to the condition being present at birth. He believed that a considerable number of infants suffered from a slight degree of adenoid vegetations, as evidenced by mild symptoms of nasal obstruction and catarrh. But there were also not a few cases in which more severe and even grave symptoms might be present. These would materially interfere with the health of the infant and did not tend to improve with ordinary medical treatment. There were several forms of the affection: the first in which there were marked nasal obstruction and catarrh, with or without epistaxis; the second in which reflex nervous phenomena were the principal manifestations of the trouble, without any real nasal obstruction (such signs might be convulsions, laryngeal stridor, and vomiting); the third those in which secondary septic affections predominated, these being chiefly septic adenitis and otitis media; and, lastly, those cases in which nasal obstruction was present and was associated with nervous and septic conditions. In by far the larger number of cases of adenoids in infancy the symptoms were slight and did not call for active operative treatment, but, on the other hand, there were certainly some cases, comparatively few in number, in which the signs and symptoms were such as to demand removal of the adenoid growth. In these the improvement that followed operation tended to confirm the fact that the various phenomena that the infant presented were in reality due to the lesion in the naso-pharynx.

LARYNGOLOGY AND OTOLOGY.

WEDNESDAY, JULY 29TH.

Sir FELIX SEMON (London), in introducing the discussion on

The Operative Treatment for Malignant Disease of the Larynx,

gave a historical retrospect, first referring to the period of therapeutic nihilism, then to Czerny's experiments and to the first operations. The mortality attending the first thyrotomies led to destructive criticism, and Paul Bruns in 1879 condemned the operation. The diagnosis in those days was imperfect and so was the technique. Butlin reinstated thyrotomy in 1889 and with better means of early diagnosis and improved technique of the operation good results followed, so that in the present day if a case remained cured after one year had elapsed since the date of the operation the patient was in the same position, so far as the disease was concerned, as if he had never had malignant disease of the larynx. Sir Felix Semon reminded his listeners of the dangers of statistics. Collected statistics from various observers and various operators at different periods gave rise to erroneous conclusions. The statistics of individual observers were alone trustworthy. He said at the present time that there were five different operations at their disposal. 1. The intralaryngeal method. Its field of usefulness was extremely limited. It was conceivable that when the disease was limited to the epiglottis it might be removed by this method, but the endolaryngeal operation had its drawbacks and was generally unsuitable in malignant disease. 2. Thyrotomy, with or without the removal of smaller fragments of cartilages. This, in the speaker's opinion and experience, was in suitable cases a perfectly ideal operation.

3. Partial extirpation of the larynx. 4. Total extirpation of the larynx. The recent improvements in its technique had increased the legitimacy of this operation in desperate cases. 5. Subhyoid pharyngotomy was of limited applicability. Speaking of the difficulties in diagnosis he said that cases of malignant disease of the larynx might be classified under three heads: Firstly, those in which everyone could make the diagnosis; secondly, those in which only experts could make the diagnosis; and thirdly, those in which no one could make the diagnosis. He advised the removal of a piece of the growth by the endolaryngeal method for a pre-microscopic examination, but when in doubt about the diagnosis their duty was to treat the case as one of malignant disease.

Dr. E. J. MOURE (Bordeaux) through illness in his family was unfortunately prevented from being present to take part in the introduction of the discussion.

Professor TH. GLUCK (Berlin) made an exhaustive communication upon the operations for malignant disease of the larynx and adjacent structures. He dealt mainly with the operations for the partial and total extirpation of the organ. After referring to the works of the pioneers in this branch of surgery he briefly described his manner of operating for the relief of stenosis and cicatrisation of the trachea and larynx, and passed to a consideration of thyrotomy and laryngotomy for diffuse papillomata and circumscribed cancer of the vocal cord as well as operations for the loss of substance caused by exfoliative necrosis of the laryngeal cartilages. In connexion with the operations he had performed for the eradication of cancer in this region he had succes-fully extirpated the pharynx, the larynx, the œsophagus, the entire thyroid gland, the vagus nerve, the cervical portion of the carotid and jugular vessels, and had obtained cures of two and a half years' duration. The mortality following operations for extirpation of the larynx hitherto had been due to septic broncho-pneumonia. To combat this he performed a prophylactic resection of the trachea by which a wall of tissue—a living impermeable diaphragm—was interposed between the cavity and wound of the operation and the lungs, which rendered aspiration of foreign bodies into the lungs impossible, the trachea being shut off from the pharynx and œsophagus. In hemilaryngectomy, laryngotomy, and total extirpation of the epiglottis a plastic operation, based on the same principle, was performed. After healing of the wounds the patients could partake of food like normal individuals. The duration of development of cancer of the larynx and pharynx might be even some years before the symptoms were sufficiently marked to bring the disease under notice; on the other hand, the duration owing to hæmorrhages or hoarseness might be very short. An early diagnosis and a radical operation were the essentials for recovery. Diabetes, heart disease, or advanced age did not form absolute contra-indications for operations. Amongst the complications arising from the operations for extirpation of the larynx were uncontrollable hæmorrhage from the bowels; hemiplegia, or perhaps loss of consciousne-s and death following ligature of the carotid artery; rise of temperature and pulse-rate which might be due to sepsis, iodoform poisoning, or heart failure; bronchitis; embolism; phlegmon of the posterior wall of the trachea and of the mediastinum; and myxœdema. Professor Gluck indicated how these possible complications might be anticipated or combated. Speaking of the results obtained from the various operations which he had performed for carcinoma of the larynx and pharynx, he said that in four cases the vocal cords had been extirpated by laryngo-fissure with excellent results, the patients remaining well for six months and two and a half, three and a half, and four years, respectively. Hemilaryngectomy had been performed in 35 cases with only three deaths, one after 24 days from sudden heart failure, another independently of the operation from a phlegmon of the right gluteal muscle, and the third from pneumonia on the fifth day. From amongst a series of 22 cases of total extirpation, there had been only one death and that on the eleventh day from iodoform poisoning in an old man, aged 70 years. Amongst the 27 transverse extirpations of the larynx and pharynx, mostly with glandular extirpation also, there had been only one death. These results compared with a previous series of cases marked brilliant progress. In a former series of nine cases—certainly very serious cases—there had been four deaths, and going back to 1888 and the first cases there had been only two recoveries out of ten operations. The operation lengthened life, renewed hope, and if after a year, or a year and a half in the more desperate cases, relapses occurred, then according to the speaker's experience the end was less painful to the patients, and in the interval the patients had lived contentedly, and in some cases merrily, till the relapse brought death rapidly. Professor Gluck said that he could have brought forward 38 of his patients, some of whom had survived the operation 11, 8, 6½, 5½, 4½, and 3½ years and in full health. Others had died from other illnesses and not from recurrence of the disease. In consequence of the length of the journey he had brought only two with him; both had been the subjects of cancer of the larynx and pharynx. In the one case five years and in the other three months had elapsed since the operation. The older case had been twice radically operated upon, with total extirpation, resection of the pharynx, the great vessels of the neck, and the vagus nerve; the patient spoke with a pharyngeal voice and followed his calling of a farmer. The second spoke with the nasal-phonetic apparatus which had been devised by Professor Gluck and which was demonstrated. Professor Gluck detailed and demonstrated by means of diagrams the various stages of the operations he had spoken of and also demonstrated a series of laryngeal and cancerous growths he had extirpated. The majority of the individuals to whom the organs and growths belonged were alive and well.

Dr. HERBERT TILLEY (London) referred to some points in the technique of the operation. For checking the oozing from the wounded parts in the larynx he had found Whitehead's varnish a most excellent antiseptic and styptic. He had observed subsequently to the operation small granulations in the anterior commissure at first suggesting a recurrence, but which were due to the stitches used in closing the cartilage.

Dr. W. JOBSON HORNE (London), speaking from a pathological as well as from a clinical experience, considered that when an error was made in diagnosis it was more commonly on the side of regarding an innocent growth as malignant than a malignant growth as innocent. An early diagnosis was of the utmost importance, but too much value might be attached to the information to be derived from a bit of the growth removed by the endolaryngeal method for micro-copic examination. A negative result from such an examination was to the case what a negative result from an examination of the sputum was to a doubtful case of pulmonary tuberculosis. He thought it better not to disturb the growth by the endolaryngeal removal of a portion without first obtaining consent to a laryngo-fissure if deemed to be advisable, and in doubtful cases he considered laryngo-fissure should be resorted to.

Mr. R. H. WOODS (Dublin) was in favour of suturing the cartilages after thyrotomy; in his experience granulations within the larynx had not followed. He was opposed to the use of Whitehead's varnish; there was the danger of œdema following owing to the surface which it closed not being absolutely aseptic. The proper preparation of the patient he held to be a factor in preventing sepsis.

Dr. E. S. YONGE (Manchester) communicated the notes of two cases of epithelioma of the larynx remaining well two years after operation (thyrotomy).

Dr. J. DUNDAS GRANT (London) referred to the possibility of the fragment removed for microscopic examination containing no malignant growth, and to the frequency with which the disease was found on thyrotomy to be much more extensive than the laryngoscope had indicated. He thought that cases in which, before operation, there was a tendency to the regurgitation of fluids into the larynx were less favourable in their prognosis than those in which that did not exist, as there was every probability of the occurrence of "swallowing pneumonia."

Mr. C. P. CHILDE (Portsmouth) spoke of sudden death following the operation for cancer of the larynx in alcoholics.

The PRESIDENT (Dr. P. W. WILLIAMS, Bristol) congratulated the section upon the excellent discussion and expressed himself in accord with the views about the value of a pre-microscopic examination and statistics.

Sir FELIX SEMON and Professor GLUCK replied to the several points raised. Sir Felix Semon advised food from the first through the mouth; and preferred cocaine to any other styptic for arresting bleeding within the larynx. After thyrotomy he sutured the cartilages, taking care to pass the sutures through only the superficial part and not to enter the larynx.

TROPICAL DISEASES.

WEDNESDAY, JULY 29TH.

The PRESIDENT (Dr. GEORGE H. F. NUTTALL of Cambridge) in his introductory remarks referred to the importance of the study of tropical medicine and congratulated the British Medical Association upon its decision to hold a section devoted to tropical diseases at its annual meetings. He could not regard any medical conference as complete in which the study of tropical ailments did not find a place. In no department of medicine was a larger field of inquiry open and in no department had more important work been accomplished during the past few years. He stated that in temperate and tropical climates many parasites existed having a similar life-history and the study of several of the parasites met with in temperate climates served to elucidate and to advance their knowledge of parasites which had hitherto been looked upon as peculiarly tropical. Their knowledge of mosquitoes had been advanced by work conducted in laboratories in England and as a further example he mentioned that he had found a filaria (von Linstow) in the head of stomoxys calcitrans in England and apparently the larval forms present in the blood of cattle. In well-appointed laboratories in England investigation could be carried out more readily than under the unfavourable conditions usually present in the more remote parts of the empire.

Three papers dealing with the disposal of sewage in the tropics were communicated.

Dr. W. J. R SIMPSON (London) opened the discussion by reading a paper on

The Disposal of Excreta in the Tropics

and drew attention to the fact that in dealing with the question of sewage in the tropics they had to consider not only its final disposal but also its collection, removal, and purification. His recent experience in China had shown him that perhaps of all peoples the Chinese were the most careful in the collection and disposal of their excreta. They were not sanitary but commercial reasons which determined the disposal, as all excreta were marketable commodities for the manurial value which they possessed. A proof that it was not hygienic reasons that induced the Chinaman to dispose so carefully of all excreta was the manner in which he dealt with garbage and house refuse. These were thrown about his dwelling causing a foul environment. A further lesson to be learned from the Chinaman was the fact that he did not scatter fresh excreta on the soil but stored them in barrels or cesspools adjacent to the garden or farm for some time before using them. In this way the excreta underwent bacterial changes similar to those which they knew of in the septic tank recently introduced in England. He held that the land should be the final destination of all excreta in the tropics and the method of conveying them thither was the problem. In quite small villages the pail system would serve; in larger villages public latrines in convenient places over raised and well-cemented cesspools, protected from flood water, were indicated; but in small towns of, say, from 10,000 to 15,000 inhabitants a system of pipes to remove the excreta would appear to be necessary. For such towns a pail system so arranged that the sewage could be emptied into conveniently placed depôts in different parts of the town and a system of pipes conveying the contents of the cesspools to proper outfalls would seem requisite. In large cities, such as Bombay, Calcutta, &c., with an outfall to the sea, a water-carriage system presented, perhaps, the best method of disposal, but in an agricultural population the habits of the people had to be considered and any disposal of excreta, &c., must be accomplished in a manner which recommended itself to the custom of the inhabitants. Dr. Simpson was against the wholesale introduction of European methods in Oriental countries. He considered it better to improve the existing methods rather than to introduce something totally new; he therefore considered the pail and cesspool system with pipes leading to an outfall in fair-sized towns as most suitable. The disposal of the sewage on the soil was usually accomplished by burying in trenches and cultivating the soil over them. They must not be too deep—certainly under two feet. In dry countries the trench method of disposal must be combined with some form of irrigation and in wet countries it seemed best to store the excreta in cesspools during the wet weather, letting the contents run off in trenches when the wet season was over. In all disposal of sewage by pails, carts, &c., the chief difficulty was to keep the utensils clean and means of cleaning these must be provided at the depôts. He had never been able to trace disease to a properly conducted trenching ground, while swarms of flies over a trenching ground indicated that it was not being properly managed.

Lieutenant-Colonel ANDREW DUNCAN, I.M.S. (retired), also read a paper on the same subject and advocated for the tropics the system recommended in Poore's "Rural Hygiene." He had seen this tried in India with excellent results by Colonel Hamilton, I.M.S., the excreta being buried in shallow trenches in the hospital compound and the soil cultivated. The excreta must not be buried too deeply nor any antiseptic used; it was dangerous, however, to allow of too light a covering as the birds were apt to scratch the earth away. Earth closets were to be recommended, the earth being previously sifted and stored but not artificially dried. The surface layers of the soil should be used for the earth closets, for when taken from too deep a pit the earth was comparatively sterile.

Captain LEONARD ROGERS, I.M.S., contributed a paper entitled

The Influence of the Septic Tank on Pathogenic Bacteria.

In carrying out a series of experiments in connexion with this subject he separated the organisms present in the septic tank effluent from the fluid in which they lived and tested the action of the sterile effluent on various pathogenic bacteria under anaerobic conditions in order to see how far the chemical conditions were injurious to the added organisms. The following pathogenic germs were experimented with: typhoid fever, cholera, anthrax, staphylococcus, streptococcus, micrococcus melitensis, dysentery, and plague. So far the results tended to show that the septic tank process was inimical to most of the pathogenic organisms tested, with the exception of the bacillus of anthrax, yet it was not safe to allow the effluent to reach any water which might possibly be used for drinking purposes. Captain Rogers stated that the septic tank process was beginning to be introduced in various places in India.

Dr. H. M. FERNANDO (Colombo) stated that there were serious objections to the pail system. Owing to the frequent ablutions of the natives there was a great danger of surface pollution and thereby contamination of the wells. Again, many sects of natives would not eat the cereals or vegetables grown on soil manured by human excreta and would not even give the products of such land to their domestic animals.

Dr. W. B CLARKE (Barbados) mentioned that in Barbados the septic tank system had been in use for a considerable time. The soil was a porous limestone and the excreta were received in cavities dug out in this soil and covered over. He had lately had occasion to open one of these tanks into which the house drainage had been received for a long time and found it quite empty and free from smell. He mentioned that he knew of a number of persons being infected by typhoid fever from the opening of a trench in which typhoid fever stools had been thrown 12 months previously. He asked for information concerning the effects of sunlight on septic tanks.

Fleet Surgeon P. W. BASSETT-SMITH, R.N., drew attention to the possibility of the ova of intestinal parasites gaining access to the human body when the excreta were utilised for manuring the soil in which vegetables were grown.

Sir PATRICK MANSON, K.C.M.G., considered that the system of disposal of excreta practised in China was admirable from a sanitary point of view.

Dr. F. M. SANDWITH (London and Cairo) said that although he condemned the cesspool system on principle his objections to it had been considerably modified from his experiences in Egypt. He had endeavoured to induce the Egyptian Government to introduce a water-drainage system, although he was bound to confess that he had never known any epidemic to arise from cesspools. Provided that the cesspool was water-tight and the contents were removed by pumping and conveyed by a tube to a cart there could be few objections to the system.

Mr. J. CANTLIE (London) regretted that in the discussion the terms employed had not been more carefully defined. Some of those who took part in the discussion seemed to be confusing cesspits with cesspools and pervious cesspools with septic tanks. It was useless arguing on such a basis. Moreover, the term "tank" might refer to a closed or open structure, in one of which anaerobic bacteria became virulent

and in the other aerobic germs throve. Even when a tank was exposed to the air the bacterial (aerobic) changes were confined to the surface layers unless the contents of the tank were frequently stirred. In this the Chinaman showed his wisdom, for he from time to time stirred the contents of the barrel in which he stored the excreta, thereby insuring a more complete bacterial change than in the underground septic tank in use in this country.

Dr. L. W. SAMBON (London) drew attention to the fact that the cesspool system and the employment of the contents for manuring purposes had been in use in many parts of Italy from the time of the Romans. The danger of using the excreta for gardening purposes was that the vegetables became infected to such an extent that it was impossible to cleanse them by even most thorough washing. It was therefore dangerous to eat vegetables raw from soils that had been thus manured.

Captain A. F. W. KING, I.M.S., remarked that private latrines in India were so numerous that the septic tank system could not be thoroughly carried out.

Major J. PENNY, I.M.S., stated that the pail system had been introduced into Burmah with success. Provided that the buckets, &c., were carefully cleaned and inspected the pail system suited the habits and customs of the natives of Burmah admirably.

Dr. C. CHRISTY (Liverpool) said that the destruction of sewage by incineration was no doubt the safest from a hygienic point of view. When sewage was used for manuring purposes there was great danger of the spread of disease by insects. In Uganda the natives used a cesspit into which they all defecated and when it was full they covered it over and dug another cesspit. In a country in which there were no wells this system answered admirably.

Mr. K. W. GOADBY (London) stated that a septic tank, properly speaking, was an anaerobic tank from which leakage was impossible and that the cesspool as generally built was especially arranged for subsoil pollution. Most pathogenic bacteria were preserved at their greatest virulence under anaerobic precautions, hence the passage of the effluent over the aerobic filters might tend to destroy those pathogenic bacteria which might have passed through the septic tank.

The PRESIDENT agreed with Dr. Sambon that vegetables treated with human excreta should not be eaten raw. Ravenal in Philadelphia found the bacillus of anthrax distributed by spores after passing through the septic tank. As a means of combating the outbreak of typhoid fever in the United States Army during the late war Reed had insisted upon doing away with open cesspools in the camp and receiving the excreta in closed tanks, with the result that typhoid fever disappeared from amongst the troops.

Dr. SIMPSON, in replying to the arguments advanced, stated that he did not advocate cesspools for large towns. The danger of eating plants grown on soil manured by excreta could be easily guarded against by selecting the crops to be grown. From the danger of the spread of infection by flies he was not in favour of the open tank bacterial treatment of sewage but of the closed septic tank.

Fleet Surgeon BASSETT-SMITH, R.N., read a paper entitled

Sprue, Primary and Secondary, with Special Reference to the Blood Changes found, with Illustrated Cases.

Amongst the sailors of the British fleet on the China station sprue occurred occasionally. The climate seemed to be an etiological factor in sprue and the higher the temperature of the locality the more serious was the type of the disease. According to the surgeons of the United States army in the Philippines sprue was a post-dysenteric disease, an assertion which he did not agree with. He regarded sprue as a disease of bacterial origin associated with chronic inflammatory changes in the intestine, causing a diminished supply of those nitrogenous products which were required in the formation of the red corpuscles. The anæmia in sprue was so pronounced at times as to resemble pernicious anæmia except that the hæmoglobin value of the cells was also reduced and megaloblasts were not present. The characteristic features of the disease were irregular and chronic diarrhœa, flatulence, fermenting offensive stools, progressive emaciation, extreme secondary anæmia, and changes in the buccal mucous membrane with or without aphthæ. The post-mortem appearances were a thinning of the gut with destruction of the mucous membrane and its absorbent glands. The primary form of the disease was that in which the symptoms were insidious and commenced as ordinary diarrhœa. The secondary form followed after a dysenteric attack, the dysenteric processes having subsided. In a case of primary sprue he had found from a blood count that the blood showed excessive changes; the red corpuscles numbered only 1,000,000 and the white corpuscles 2960 per cubic millimetre. After treatment with iron and arsenic in very full doses and fresh bone marrow with ox gall pills the blood count showed marked improvement. The other case recorded in the paper was one of secondary sprue which had ended fatally. The post-mortem examination showed that the lungs were congested and œdematous, that there was fatty degeneration of the heart, that the liver was large and pale and weighed 77 ounces, that the pancreas was large and hard, that the stomach was greatly distended, that the intestinal wall was almost diaphanous, and that there was no ulceration in any part of the intestine. There were shown charts of the temperatures, a table of the blood counts, a diagram of the blood film, microscopic specimens, and a spirit specimen of the gut demonstrating the excessive thinning.

Sir PATRICK MANSON said that of the three dietaries, milk, meat, and strawberries, recommended in sprue it was not desirable to follow rigidly any single line of treatment, but to alter from one to the other as occasion and the peculiarities of the patient required. He had obtained marked beneficial results from the administration of a preparation of arseniate of iron (Squire) administered hypodermically.

Dr. CLARKE stated that sprue was common amongst the natives in Barbados and remarked that pigmentation of the skin and lunacy were characteristic features towards the termination of the illness.

Dr. G. C. LOW (London) did not believe that the disease termed sprue in Barbados and described by Dr. Clarke was the same disease as Oriental sprue. He had seen the cases in Barbados and thought they were more of the nature of pellagra or some closely allied disease.

Mr. CANTLIE believed that the early indications of sprue consisted in a catarrh of the buccal, pharyngeal, and gastric mucous membranes. In the Far East attacks of tender tongue and painful ulcers on the gums were common ailments and in time those who suffered from these conditions developed sprue if they remained in the East. He had previously ascribed the disease to the use of acrid oils used in cooking by the Malays and Chinese. At a meeting of the Tropical Section he had advocated a purely meat diet for sprue and he for some 12 years employed that line of treatment exclusively with marked benefit.

Mr. GOADBY stated that he had been engaged for some time at the bacteriology of the mouth in sprue but as yet had come to no definite conclusions on the subject.

Dr. CHRISTY contributed a paper on

The Entry of the Spore into the Red Corpuscles.

He stated that at that stage of the life cycle of the malarial parasite when the sporocyte broke down and it became a free agent in the plasma and then entered and developed in another blood corpuscle there appeared to be a gap in their knowledge. He showed by a series of drawings the process of entry of the spore. He remarked that a spore could not long remain free, but instead the minute particles of the protoplasm, now active amœbulæ, adhered to the rim of the very first corpuscle which they came in contact with. He showed diagrams and specimens of these adhesions and in one demonstrated three amœbulæ attached to the rim of one corpuscle.

ORAL INSTRUCTION OF THE DEAF.—The annual meeting of the Association for the Oral Instruction of the Deaf and Dumb was held on July 29th at 11, Fitzroy-square, London, W. The Rev. C. H. Parez moved the adoption of the report for 1902, which was seconded by Mr. B. St. John Ackers. The director, Mr. van Praagh, then made a few remarks about the year's work and referred to the spread of the pure oral system, expressing the hope that much more would be done by the Government in the future both for the training of teachers of the deaf and for the education of deaf children. The staff of the practising school gave an illustration of the system—teaching by speech and lip-reading—showing the work in the elementary and advanced stages. Miss Amy Paget distributed the certificates and prizes to the successful students and pupils.

THE LANCET.

LONDON: SATURDAY, AUGUST 15, 1903.

Insanity in Relation to Civilisation and Race Decay.

THE presidential address delivered in the Section of Psychological Medicine at the meeting of the British Medical Association at Swansea by Dr. ROBERT JONES, and published in THE LANCET of August 8th, p. 366, serves to call attention to some of the deeper-lying problems of insanity regarded from the sociological standpoint. The main theme of the address is the development of insanity, and especially of the less favourable and more degenerative varieties of insanity, *pari passu* with the march of civilisation. For though the past century has witnessed an unparalleled advance in the material, moral, scientific, and social progress of the nation this has not been achieved except at serious cost. "We find," says Dr. JONES, "that our advance has not been without sacrifices—losses here and retrogression there—and that civilisation itself has not been an unmixed blessing." For in the struggle which has marked our advancement the conflict has resulted not solely in the conquest of ignorance and in the higher achievements of science and of knowledge; the pathway of progress has been freely strewn with the wrecks and remnants of mental failure and physical degeneration. Of this sad fact evidence, patent to the casual eye sometimes and at other times obvious to the close observer, may be seen in many directions, and it is a fact that must give pause to those who regard with too great complacency the march of human progress. We may travel quick nowadays, but some of us have to pay heavy rates.

The law of survival of the fittest in the struggle for existence in its operation through the ages of human progress exacts its penalty in determining that the feeble, the degenerate, and the unfit shall perish. But man, rising superior to that law, elects that the feeble, the degenerate, and the unfit shall be cared for, housed, and preserved to live to old age and, it may be, to propagate their kind, and the accumulated results of such action are seen in the steady increase of the effete and the degenerate and in the increasing burdens imposed upon society for their maintenance. So far as trustworthy information is to be had it appears that insanity increases as man departs from the savage and semi-civilised states and approaches the highest grades of civilisation. "It is only when we come to higher civilisation," adds Dr. JONES, "that the higher forms of insanity are seen." Many factors have contributed towards the increase of nervous diseases and of insanity with civilisation and to the increased malignity and incurability of many of the types of insanity which now prevail in civilised communities. On the one hand there exist as etiological factors the greater mental toil and hurry of the modern strenuous life, the overtasking at school, the increased amount of irksome study for the learned professions, the more exciting nature of our amusements, the sensationalism and pruriency of the mental pabulum offered in newspapers and literature to all classes alike, the more stimulating character of our diet, and the restlessness introduced into life by increasing facilities of travel and communication. Moreover, among the lower strata of society the overcrowding and the unhygienic conditions of slum life in great cities, the free propagation of the weak and the unfit, the presence of a considerable neurotic and pauper alien strain, and the widespread existence of alcoholic intemperance act as contributory factors in the same direction. It is thus seen that great centres of civilisation practically manufacture their own unfit—viz., their paupers, lunatics, neurotics, and degenerates. Indeed, criminologists have even taught us in recent years that society is the broth or culture medium which favours the growth of one of its microbes—the criminal. London alone is responsible, says Dr. JONES, for the production of over 70 insane persons per week a number which, he thinks, is destined to increase.

In reference to types of insanity which are growing in numbers as in importance at the present day, Dr. JONES mentions dementia præcox and general paralysis. Dementia præcox, a disease rare in the early part of the last century, now attacks some of our most promising youth, and the condition is practically incurable. The increase of general paralysis of the insane is another serious factor in modern civilisation; while the difficulty or the impossibility of limiting the spread of syphilis has rendered the outlook in this direction grave. It seems to be generally agreed that a hundred years ago there were not only fewer cases of insanity but those which occurred were acute and curable. Not until Jan. 1st, 1859, was the number of lunatics officially registered in this country. At that date there were 36,762 insane persons—a proportion to the population of 1 to 536. To-day they number over 113,000—a proportion to the population of 1 in 293—and the tendency of much of the insanity which comes under treatment to-day is to end in dementia and to become incurable. Melancholia has shown in recent years a considerable rise among the educated and private classes of the insane and recovery is rarely the happy issue of melancholia, more especially in men. With the progress of civilisation, therefore, concludes Dr. JONES, not only is insanity on the increase but the occurring varieties are less curable, the physique of the town-dwelling section of the population has deteriorated, and the statistics of recovery from insanity are less favourable to-day than they were as comparatively recently as 25 years ago. No one reading Dr. JONES'S thoughtful address can fail to be struck with the evidence for a pessimistic view. But relief may be at hand nevertheless and may come from the same direction as the evil. The increased intellectual activity, which is now reproached for bringing in its wake a train of psychological ills, will become more disciplined in its working, when the mental health of the people will improve, and the blessings of the fuller life which modern education and modern invention have brought within their reach will be enjoyed with impunity.

The Histology of Muscle.

THE structure of muscle is a subject of perennial interest and although the description and diagrams of various observers are repeated with but little alteration in successive editions of their own treatises, it is remarkable that no two histologists who have investigated the subject at first hand agree in all points in their accounts with each other. The existence of a spiral fibre encircling the muscle fibre, as an explanation of the striation of voluntary muscle, was advocated by Mr. SKEY many years ago but has been altogether ignored by more recent microscopists. In the April number of the *Archiv für Mikroskopische Anatomie* this old doctrine has received unexpected confirmation from Dr. KARL MÜNCH, the assistant in the Pathological Institute of Geneva. This observer, in the course of his researches upon the precise limits between striated and unstriated muscle, on examining the smooth muscle cells of the œsophagus of the cat, noticed with surprise that the nuclei of such cells presented a more or less well-marked transversely or obliquely striated aspect. Further inquiries showed that the same appearance was visible in the nuclei of the muscle cells of the stomach, the intestines, and the bladder not only of the cat but of other mammals as of the guinea-pig, the rat, and the rabbit. Special arrangements require to be made for success in the observation. The lens must have a high magnifying power —viz., from 700 to 1000 linear. The specimen must be taken immediately after death, delay of a quarter of an hour causing all traces of the spiral disposition to be lost. The fragment to be examined should be treated with a 2 per cent. solution of acetic acid or with a 3 to 5 per cent. solution of citric acid. The focussing of the nuclei requires the greatest care, for the whole depth of the object has to undergo examination, and the different aspect presented by each nucleus, according to whether the superficial or deep surface or the internal substance is in focus, affords to some extent an explanation of its structure and of the presence of the spiral band. With such high powers the manipulation of even a skilled microscopist is taxed to the uttermost.

The appearances which Dr. MÜNCH describes may be briefly summed up by saying that the nucleus, being supposed to rest on its side, an oblique striation is observable on the distal surface, the striæ, which are very faint, running from the left downwards to the right. On focussing the proximal surface, a more distinct striation is observable, the striæ, however, running at an angle to or divergently from those on the distal surface. If the internal substance of the nucleus is now focussed all manifestation of striæ is lost, so that the appearances presented coincide precisely with those which might be expected to occur were a fibre to be wound spirally round the nucleus from left to right. Occasionally and less frequently the striæ run from right to left from above downwards. As a means of fixation Dr. MÜNCH recommends firstly the use of the smallest fragments of unstriated muscle possible and then that these should be immersed for five minutes in a solution of 3 to 5 per cent. of citric acid and afterwards treated with a 7·5 per cent. solution of sublimate; finally, they should be thoroughly washed and placed in iodised alcohol in the usual way. The striæ are anisotropous and are stained with hæmatoxylin, carmine, saffranin, cochineal, methyl-green, and thionine. The number of turns of the spiral fibre in each nucleus varies considerably. The smallest number which Dr. MÜNCH has met with is three and a half and the largest he has counted with certainty is 15. The nuclei do not appear to possess a membrane, though their protoplasm is sharply limited and defined from the adjoining cell protoplasm. Having satisfied himself of its at least occasional existence Dr. MÜNCH proceeds to ask the following three questions—whether the spiral figure is always present, whether it is the only morphological figure that exists in the nucleus, of what material it is composed, and what is its developmental history. In regard to the first point he has not been able to assure himself of the presence of the spiral figure in the striated muscle cells of mammals, birds, fishes, or arthropods (though in one instance he observed it beautifully marked in a thin frog that had outlived the winter), nor could he make it visible in the nuclei of the slender unstriated cells of gastropods or vermes. Still, he entertains no doubt that it forms a normal constituent of all active muscle cells and is neither an abnormality nor an evidence of degeneration, neither the indication of a resting state nor an antecedent or subsequent phase of cell division. In regard to the second question, he has not been able to see any other structure, not even a nucleolus, in the nuclei presenting a spiral figure, but this, however, is not surprising considering the minuteness of the object. In regard to the third question it can only be said that the spiral figure stains like chromatin and may therefore represent that constituent in the nucleus. In regard to the developmental history of the spiral figure he has no information to give.

Having thus exhausted the histology of the nucleus Dr. MÜNCH next proceeded to inquire whether the transverse striation of striated muscle might not be due to the spiral arrangement of the anisotropous substance. It is impossible, he observes, to obtain a complete stereoscopic view of any object with the microscope, and we must therefore draw on the imagination to build up from the appearances presented by focussing at successive depths the form of an object which would result from the superposition of the several images; and there are many difficulties to overcome in the endeavour to effect this plastic reconstitution. In the first place, there is the difference between the comparatively thick muscle fibre and the extreme delicacy of the zone formed by the parallel spirally-running striæ; secondly, the irregularity of the parallel striation; thirdly, the errors arising from the peculiar refractive powers of a transparent cylinder, which, as Dr. MÜNCH shows by diagrams, materially alters the direction of fine lines drawn parallel or at right angles to each other on its surface; and, lastly, there is the chance of confusion arising from the tendency of the fibre to split up into various sized columns, thus forming fibrils, or into discs. In the endeavour to overcome these difficulties it may be noticed that, whilst it is impossible to follow one stria completely round a fibre on account of its minuteness, however many muscular fibres are examined a true transverse striation is never met with. The striation presented by the muscular fibres is, he contends, in all animals and

always oblique and this character is accentuated by focussing deeper, for it will then be found that the direction of the lines forming the striæ alters as they would do if formed by a spiral fibre. To obtain a clear understanding of the appearances presented by muscular fibre he recommends that a few oblique spiral lines should be made with a file on a glass cylinder, which must be solid and not hollow since the latter does not give the effect due to refraction. Dr. MÜNCH strongly recommends as an object favourable for the examination of the intimate structure of muscle the fibres that form a kind of plexus over or on the bag of the bee. These can be fixed by immersion of the insect in 70 per cent. alcohol on its return from "pillage," when it will contain as much as half a cubic millimetre of honey. Fibres still more favourable for examination are found in the muscles of some of the rhynchophores, as in the *Mylops cariolosus*. These muscles, which are extremely powerful, show with great clearness appearances compatible with the disposition of a spiral fibre running round the muscular fibre and Dr. MÜNCH gives many diagrams in support of his views. From all this it is concluded that the contractile principle exists in what Dr. MÜNCH terms the "disc spiral" and that the force operating in the disc spiral causes the contraction of the fibre. The shortening is a problem of electro-dynamics, not of the transport of material. The changes observed in contraction are not causes but effects of contraction.

The British Pharmaceutical Conference and the Sale of Poisons.

THE presidential address of Mr. T. H. W. IDRIS, delivered at the British Pharmaceutical Conference at Bristol on July 28th, deals at some length with the sale of poisons in relation to the safety of the public. Mr. IDRIS views with considerable distrust any attempt to lessen the restrictions under which poisons for use in connexion with farming and gardening are sold to the public—a matter into which a departmental committee has recently made inquiry. Mixtures are sold as sheep-dips, weed-killers, and for various agricultural purposes which contain virulent poisons, and these are employed in large quantities to be handled by men belonging to the less educated classes. At the same time the sale of these various commodities represents highly profitable commerce, and those connected with the trade are no doubt deeply interested in freeing it from as many restraints as possible, although these may be imposed for the prevention of obvious dangers. In one instance cited by Mr. IDRIS a firm was prosecuted and convicted by the Pharmaceutical Society for the sale of an "ant destroyer" which proved to be "a preparation of arsenic put up in a most dangerous, sweet and seductive form costing about 3½*d.* and sold for 2*s.* 6*d.*" We quote Mr. IDRIS'S words which sufficiently prove that it would be difficult to conceive any class of goods the free sale of which would combine a greater proportion of profit to the vendor with greater danger to the public.

The sale of poisons to the public in any promiscuous manner, while it must lead to a certain proportion of deaths by accident, suicide, or murder, brings questions of death certification and of the disposal of the dead prominently before us. Mr. IDRIS dwells upon the impunity with which the criminal poisoner may find himself able to carry on his operations and the slight protection which the present system of death certification affords to the public, giving a number of instances of murders by poisoning which were not discovered until after burial had been permitted. He refers also to evidence given by Dr. T. STEVENSON before the recent departmental committee on the regulation of cremation, when he stated that in 50 per cent. of the criminal cases of arsenical poisoning of which he had personal knowledge suspicion was not aroused in the minds of the medical men attending the victims until after death. Mr. IDRIS also discusses at length the question of the separation, by legislation or otherwise, of the function of the medical man in prescribing and that of the pharmacist in dispensing. The instances which he cites of accidents which have arisen affecting sick persons are divided by him into three classes—those occurring through mistakes where medical men have dispensed their own prescriptions or had them made up in their surgeries; those occurring through mistakes made in public institutions, due principally, he considers, to the errors of nurses imprudently intrusted with duties which had better have been performed by others; and mistakes made in druggists' shops. A large number of these in each class might probably have been avoided by the use of fluted bottles or of bottles of absolutely distinctive shape and appearance for poisons upon all occasions, although all precautions of this nature prove liable to failure, the human tendency to err defeating them. The regulations of the Pharmaceutical Society as to the keeping, dispensing, and selling of poisons, which provide both for the keeping of poisons so that they may be distinguished from other drugs and for the sending out of liniments, embrocations, and lotions containing poison in bottles distinguishable by touch and properly labeled, are useful and clear. These regulations do not affect medical men or public institutions, but the many stories of tragic accident with which we are all familiar should convince anyone who ever dispenses poisons, and who may need convincing of what is obvious, of the urgent need for mechanical reminders of the dangers which attend his work. These methodical ways are necessary to counteract the element of human forgetfulness or human negligence which cannot be eliminated where men, sometimes with brains overtaxed by work, are employed.

With reference to the question of medical men dispensing their own prescriptions, the mistakes which have been made in surgeries do not seem to us necessarily to strengthen the views of those who hold that the medical man and the pharmacist are best employed in performing distinct and separate functions. The human element of forgetfulness or negligence will not be excluded because the druggist makes up the prescription and not the medical man who is the author of it, although the best result may be arrived at by each fulfilling the duty for which his practice prepares him. In many districts the medical man dispenses his own medicines because in that district there is not enough prospect of profit to attract a pharmacist as well as a medical practitioner. In other places he does so because he thereby increases his own profits in a perfectly

legitimate manner, or because he prefers the absolute certainty, gained by dispensing, that his patients obtain precisely what he has ordered. It cannot be easy to devise regulations which will forbid dispensing to the medical man where a pharmaceutical chemist is available and permit it to him where such assistance cannot be obtained, while all such regulations in their general working will affect the public prejudicially by causing delay where medicine is needed in a hurry. The consideration of the laws prevailing in other countries is no doubt of use in dealing with topics of this kind, but care has to be exercised in applying the laws of one country to the conditions in another. In such a purely domestic matter as the prescribing of medicine foreign or continental habit forms no valuable precedent. Again, for whatever reasons medical men are now dispensing their own prescriptions they must not be asked to give up their present freedom while the druggist can prescribe without restriction. But the imposing of some restriction upon druggists becomes very difficult when we remember that the law does not prevent anyone, whether qualified or not as a medical man, from treating illness. The legislature might deem it illogical to debar pharmacists from doing what anyone else may do, either for himself or for his neighbours, so long as he does not pretend to be officially a medical man, registered as such.

Annotations.

"Ne quid nimis."

POOR-LAW MEDICAL OFFICERS IN IRELAND.

WE have on several occasions been glad to take up an opportunity to throw what weight of argument and expostulation we are able into the scale in favour of the Irish dispensary officers in their uphill fight against an unjust and underpaid system of service. In a leading article[1] not a year ago we quoted some strong remarks from Sir Lambert (then Mr.) Ormsby in which he adjured Irish medical students entering upon their profession as follows: "If you are men and not slaves you will not enter the service as it at present exists." He harped upon "the gross and heartless treatment meted out to our medical brethren serving in the Irish Poor-law medical service, particularly on the question of superannuation after a lifetime of toil and ill-requited labour." Now once again the subject is prominent and we gladly support the words of Dr. Edward C. Thompson, M.P. for North Monaghan, which appear in a letter in the *Freeman's Journal* of August 5th. This letter is the result of a question asked in the House of Commons by Mr. P. O'Brien and the answer of the Chief Secretary for Ireland thereto. Mr. Patrick O'Brien asked the Chief Secretary whether he was aware that the Ballinasloe board of guardians had failed to procure a medical officer for a certain dispensary district at a salary of £120 per annum, and if so whether any medical men stated at what salary they would be willing to serve, and how many vacancies existed at present in the Irish dispensary service and for what period each district had been vacant, and several other questions which we need not now recount. Mr. Wyndham replied that candidates had offered themselves for the Ballinasloe vacancy at a salary of £200 a year. The guardians, however, decided to re-advertise for medical officers at the lower salary. There were, said Mr. Wyndham, eight other vacancies, adding that he knew that "medical officers in Ireland had a great deal of work to perform and that their salaries were not high, but for all that he thought their claims would be more deserving of recognition if they abandoned these practices and awaited the report of the viceregal commission which was looking into Poor-law questions." The practices referred to are those of the Irish Medical Association in making speeches and passing resolutions suggesting that no medical man should accept office at a salary of less than £200 a year. We agree with Dr. Thompson in thinking that Mr. Wyndham made a mistake in blaming the Irish Medical Association. Mr. Wyndham on a previous occasion had declared the recognised grievances of the Irish Poor-law medical officer to be beyond the scope of the viceregal commission. Now he recommends the same victim, before striving to get his grievances adjusted, to await patiently the results of this very commission which has been expressly described as having nothing to do with the affairs of the medical officers. We are glad to see there are no signs that the medical profession in Ireland intend to profit by such Job's comfort as a patient expectation of the viceregal commission's results might afford. The Irish Medical Association has in the steps which it is taking in this matter the cordial sympathy of medical men in every division of the kingdom and we trust that it may not be long before the Irish Poor-law medical service is raised to a position in which its officers can take a proper pride.

[1] THE LANCET, Nov. 15th, 1902, p. 1333.

THE PATENTING OF SURGICAL INSTRUMENTS.

A CORRESPONDENT signing himself "Patentee," whose letter appears at p. 508, disagrees with the views expressed in THE LANCET as to the patenting of surgical instruments by members of the medical profession. "Patentee" divides his argument into a statement that many medical men take out patents and an analogy between the patenting of an invention applicable to surgery and the protection of a book or article upon a medical subject under the law of copyright. As to the first we would point out that if many medical men patent instruments of their own devising and derive profits from the royalties earned by selling them, very many medical men do not and that the question whether upon principle it is desirable that they should do so is not affected by the statement of these facts. It has long been held by the medical profession as a principle to be observed by its members that discoveries in medicine and surgery achieved by the individual are made for the common good of humanity and for common use by all members of the medical brotherhood. The medical profession will not tolerate the secret or proprietary remedy turned into a source of revenue by a medical man, and yet a medical practitioner might by means of a genuine discovery, from the use of which others were excluded, or in the use of which they were restricted by a royalty, draw considerable emoluments, or attract many patients to himself. Without discussing the circumstances in which medicinal compounds may become monopolies, we would question whether there is any great distinction in principle between patenting an instrument and protecting for private profit a drug or a combination of drugs. It is a tendency to create a monopoly which is objectionable and the tendency to create a monopoly where the medical profession is concerned is open to other objections besides the increase of price to which "Patentee" refers. For example, one man may invent an instrument and another may improve upon it to the advantage of all using it and of their patients, but the alleged infringement of a patent may lead to squabbles. The analogy between a book and a surgical instrument is an attractive one at the first glance but it will not bear examination. In his daily work every medical

man, who is zealous in the practice of his profession, seeks and attains some degree of progress, and any advance which he may make as an individual should be regarded by him as an integral part of the progress aimed at by the medical profession as a whole. The writing of books by those qualified to do so with authority assists in this progress by making known the results of scientific work, by collecting and comparing results already made known, and by laying open for the general use of the profession new and improved methods in medicine and surgery. The copyright in the book or article protects only the writer's ideas in the form in which he has expressed them. It protects his work in writing the book, it neither protects nor pretends to protect discoveries in medicine and surgery; on the contrary, it is written for the express purpose of making them more widely known. We venture to question the opinion of "Patentee" that the patenting of surgical instruments in this country would benefit the profession at large by the exclusion of "cheap and nasty foreign-made instruments." The influx of these would only be increased by anything which raised the price of better articles, and even where infringements of patents were believed to have taken place the expense and difficulty of establishing patent rights would often prevent action being taken. In our view the interests of the medical profession and of the public are best promoted by the freest of free trade and the most unrestricted publicity in all that tends to aid the surgeon and the physician.

CREMATION AND CRIME IN INDIA.

OUR special correspondent in India writes: "Contrary to official expectation appreciable quantities of arsenic were easily detected in the ashes and bones from the scene of cremation. The loose regulations with regard to the disposal of the dead in India favour the crime of poisoning by arsenic very considerably, but the imperfect cremation of the body as generally practised would appear to hold out promise for the detection of the criminals." The Government of Madras, he adds, has called the attention of all district magistrates and of the inspector-general of police to the possibility of detecting arsenic in the charred remains of a cremated body. This step upon the part of the Government is a very proper one to take, since it cannot be supposed that the district magistrates could possess any specific knowledge of the subject. But we may say in regard to this question that it is well known to chemists that when organic matters are incinerated in the presence of arsenic the alkaline salts which are formed combine with the poison and fix it in the shape of non-volatile arsenite or arsenate. There is nothing very remarkable, therefore, in the discovery of arsenic in the charred remains of a body to which arsenic had been administered. The alkaline salts of the body formed on burning would be sufficient to fix the otherwise volatile arsenic and to convert it into a stable and non-volatile salt. In some classic toxicological researches, in fact, it was the custom to burn, say, a piece of liver from a case of suspected arsenic poisoning and to ignite it at a red heat. The residual ash was then searched for the presence of an arsenate.

THE DISTRIBUTION OF PLAGUE.

As regards Cape Colony, the medical officer of health of the colony states that for the week ending July 18th the condition of the various places mentioned below was as follows. At Port Elizabeth 1 case of plague was discovered—namely, a European female on July 14th. At the Plague Hospital 1 European female and 1 coloured male died and 2 patients were discharged, leaving 3 cases under treatment. Plague-infected rats continued to be found in the town. At East London a native female was found dead from plague on July 16th. At the Plague Hospital there were no admissions, discharges, or deaths; 4 cases remained under treatment. At King William's Town no case of plague was discovered. At the Plague Hospital 3 patients were discharged and none remained under treatment. Plague-infected rats continued to be found in the town. At Queenstown 1 case of plague was discovered—namely, a native male on July 17th. At the Plague Hospital 1 case remained under treatment. Plague-infected rats continued to be found in the town. In Graaff-Reinet, Burghersdorp, Stockenstroom, or Riversdale no plague in man or animals was discovered. As regards Mauritius, the Colonial Office has received information that for the week ending August 6th there were 17 cases of plague and 14 deaths from the disease. As regards Hong-Kong a telegram from the Governor received at the Colonial Office on August 11th states that for the week ending August 8th there were 9 cases of plague and 9 deaths from the disease.

A MEDICAL PRACTITIONER AND A CORONER.

AT an inquest held recently at Southport upon the body of a labourer who had died in the infirmary from accidental injuries the coroner, Mr. S. Brighouse, addressing the jury, stated that the inquiry would have been held on the previous evening, much to the convenience of himself and, he had no doubt, much to the satisfaction of the relatives of the deceased, but for the action of the house surgeon at the infirmary. The report of the coroner's observations in the *Liverpool Daily Post* of July 31st continues as follows: "On Wednesday morning, July 29th, the Southport police, as usual, telephoned to his (Mr. Brighouse's) office at Ormskirk immediately they knew of the facts of the case. He was away, but Mr. Carr, at his office, who knew the routine of his work, at once replied that there would have to be a post-mortem examination, as Mr. Bentley (the house surgeon) had not liked to say that death was due to a fractured skull. Police-sergeant Clarke then telephoned to the infirmary requesting that a post-mortem examination should be made, but Mr. Bentley refused to do so without a written order. This result was communicated to Mr. Brighouse and he himself telephoned to Mr. Bentley and asked whether he insisted on a written order and he replied that he did. Mr. Brighouse then pointed out that this was the first occasion during his office as coroner on which a medical practitioner had refused to make a post-mortem at his request. He admitted that under the Coroners Act, 1887, the doctor was legally correct, but he pointed out that it was useful to obey his instructions. A summons was therefore served upon the house surgeon to make a post-mortem. He (the coroner) found that Mr. Bentley was qualified only in November last and always found that the newer a man was the more he fancied he was the whole Royal College of Physicians." Mr. Brighouse then invited the jury to censure the house surgeon and the jury seem to have fallen in with his request. Mr. Brighouse's comments will appear to all who consider the circumstances to have been entirely uncalled for, and the fact that they should have been made publicly and that a jury should have been asked to indorse and to support them will add no weight to them. The views of a judicial officer, such as a coroner, particularly if they are not consistent with good sense or with the law, gain nothing from the approval of the worthy citizens composing the jury, who in this case heard only the coroner's side and not that of the house surgeon. When Mr. Bentley refused to make a post-mortem examination upon the authority of a telephone message from a policeman who had had a telephone message from a Mr. Carr, who was not the coroner, Mr. Bentley acted wisely. If he had made a post-mortem examination and if it had afterwards turned out that there had been some mistake in the message transmitted or that Mr. Brighouse refused to confirm the decision

of Mr. Carr, Mr. Bentley alone and not the coroner, or Mr. Carr, or the police sergeant, or the telephone company would have had to bear the responsibility. He might have been subjected to reproach or censure at the hands of the relatives of the deceased or of the coroner. When Mr. Brighouse was informed of the matter, and of the attitude adopted by the house surgeon, it was for him to forward the proper authority without delay rather than to press Mr. Bentley to commit an informality the risk of which, however small, would have affected Mr. Bentley and no one else. In any case no man should be publicly attacked by a public official for refusing to take a risk in order to further the convenience either of the official or of other people. The tone and temper of Mr. Brighouse's remarks may be judged by his observations regarding Mr. Bentley's youth. On such occasions young men have far more need to keep themselves within the letter of the law than those of greater eminence. Mr. Bentley probably acted as he did not because he "fancied he was the whole Royal College of Physicians," but because he knew that as house surgeon of the Southport Infirmary he would have to answer to the managing body of that institution and to Mr. Brighouse, the coroner, if any irregularity was brought home to him.

THE CHEMISTRY OF WHISKY-AND-SODA.

HOWEVER the fact may be deplored, whisky mixed with soda-water is a very popular drink. In Pickwickian times the favourite stimulant was brandy-and-water, later it was whisky-and-water, and now plain water is very generally replaced by aerated water. The popularisation of aerated waters has undoubtedly had much to do with encouraging the drinking of whisky. There are many persons who cannot drink plain whisky-and-water who will drink, perhaps with indiscreet relish, the same spirit mixed with sparkling water. The Scotchman or the connoisseur of whisky, not necessarily synonymous terms, on the other hand, invariably prefers plain water with the spirit, and regards the admixture of soda-water as a means of spoiling the æsthetic qualities of the whisky. But in the one case flavour is sought after, while in the other merely an agreeably stimulating fluid is desired. Some persons believe that soda-water reduces the intoxicating effect of the spirit, but probably an effervescing alcoholic liquid, judging from champagne, is more easily diffusible than a still liquid. It is well known, at any rate, that very often when plain whisky-and-water disagree, and sometimes give rise to a feeling of sickness, the substitution of effervescent water has a quite different effect. There seems to be little doubt that some explanation of this is afforded by the fact that alcohol will dissolve three times as much carbonic acid gas as water will dissolve. Alcohol would thus convey more gas to the stomach and carbonic acid gas in solution admittedly promotes the chemical processes of digestion and acts as a sedative in the stomach. Champagne is well known to be useful in sickness in allaying irritability of the stomach by virtue of the carbonic acid gas it contains. Apart therefore from the pleasing sparkling qualities of aerated water and its sharp, agreeable taste there would appear to be a sound physiological reason why whisky with soda-water is preferred by the many to whisky with plain water.

THE CLIMATIC ELEMENT IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

THE history of the treatment of pulmonary tuberculosis is an interesting and familiar one. Apart from the countless drugs which have been from time to time vaunted as "cures" of the disease, warm climates, cold Alpine resorts, sea voyages, and residence in various parts of the globe have all had their supporters as suitable and desirable, if not indispensable, elements for the treatment of consumption. Within the last few years, however, the results obtained in the sanatoriums in this country have led many physicians to believe that climate does not hold such an invaluable position in the therapeutics of pulmonary disease as was formerly insisted upon. The site of a sanatorium is all-important, but evidence is accumulating to show that it is not absolutely necessary to banish a sufferer from pulmonary tuberculosis from his country and friends and to send him for months or years to the colonies or foreign countries. On the other hand, there is reason to believe that treatment in this country has certain advantages, especially to those whose circumstances render it imperative that they should subsequently live in England. The treatment is then carried on under the same climatic influences as those to which they will be subsequently subjected and they will not be forced to accustom themselves to the manner of living followed in other countries. The paper which we publish in another column on "Results Obtained at the Mundesley Sanatorium in the Treatment of Pulmonary Tuberculosis," by Dr. F. W. Burton-Fanning and Mr. W. J. Fanning, demonstrates the very satisfactory results which have been obtained in the Mundesley Sanatorium. One paragraph in this communication is well worthy of attention. Several patients on leaving the sanatorium went to various foreign health resorts more or less renowned for the treatment of consumption. The subsequent progress of these patients was closely watched and in no single instance was the course of the disease materially different after going away from what it would presumably have been had the patient remained in his own country. We do not wish to imply that many foreign health resorts are not excellent places to which tuberculous patients may be sent if other circumstances permit, but the results of the English sanatoriums offer great hopes to those patients who are not able, from financial or family reasons, to go abroad. In short, it appears that in the treatment of many cases where foreign residence would not long ago have been considered an essential step, equally satisfactory results may be obtained in this country. We thoroughly agree, however, with the writers of the paper that there is one class of consumptive for whom a better climate than England can be found—namely, those who suffer from old-standing pulmonary tuberculosis with defective circulations and inability to stand cold, catarrhal symptoms, and perhaps with affection of the kidneys and other internal organs. For such subjects a milder climate is indicated.

THE RAILWAY DISASTER IN PARIS.

THE imagination could hardly paint anything more awful than the disaster which happened on the underground electric railway in Paris on August 8th. The occurrence has certainly no parallel in the history of electric railways and the confidence of the public has naturally sustained a shock in regard to the security of this mode of travelling. It cannot be gainsaid that now and again evidences of the fearful results that might arise through a diversion of the electric potentialities on electric railways have presented themselves. We have written strongly in these columns, and more than once, on the risks to human life which "short-circuiting" may involve and on the extreme measures which should be adopted to prevent the all-powerful electric current from taking the short path. The "boxes" in our streets catch fire, "leads" in the house get hot, and cables fuse on the railways and tramways—all through short-circuiting being established by a defect in the insulation. Short-circuiting is, in fact, the greatest source of anxiety to the electrical engineer, and however well the insulation be done various causes may be at work conspiring to its breakdown. The disaster in Paris seems to have been primarily due to an attempt to push to the terminus a train on which admittedly the motor

was "working badly." Passengers in this train had been advised to get out, but it appears that trains loaded with a human freight were employed to get the broken-down train to the end of the journey. There is little doubt, therefore, that the defective motor was the cause of a disastrous short-circuiting, with the result that the train and the succeeding trains caught fire in the tunnel. Stifling fumes arose, the electric lights, of course, were extinguished, and the whole electric system became a jumble of fused wires. The mental agony of the victims thus entombed must have been terrible. The disaster has cost over 80 lives and a black shadow of grief has overspread the French capital. It is to be hoped that the official inquiry, which must necessarily ensue, will clear up the actual cause of the calamity, at which we have made a confident surmise, and that the awful lesson which such an inquiry is bound to teach will not be lost to the world.

MR. BURDETT-COUTTS ON THE ARMY MEDICAL VOTE.

WE have received a printed copy of the speech made by Mr. Burdett Coutts, M.P., in the House of Commons on August 3rd, on the vote for the Army Medical Establishment. From this it would appear that his speech on that occasion was much longer, more important, and more carefully thought out than would be gathered from a perusal of the published reports of it which appeared in the daily press. We have no desire to reopen a public controversy of a very painful character, but some comments on our part seem to be called for. To begin with, we may say that, after having carefully read and considered Mr. Burdett-Coutts's recent speech, we are quite in sympathy and agreement with a great deal that is contained in it. It was as to the time, form, and method which were adopted and followed by Mr. Burdett-Coutts with the view of arousing public attention at the beginning that exception was taken. THE LANCET was never among those who sought to stifle inquiry into the deplorable circumstances set forth in the *Times*, the publication of which naturally gave rise to an almost universal feeling of indignant dismay. As time went on, and all the facts were elicited as to the actual conditions which brought about those deplorable occurrences, it became more and more apparent how very wide of the mark were many of the allegations and speculations that had been put forward. There is no need, however, to go into all this now. We dealt with the whole subject and with the needs and reform of the Army Medical Service, together with measures for the coöperation of the civil profession in time of war, in a series of articles at the time and are glad to think that much of what we then suggested is now being done. Without agreeing with every word that Mr. Burdett-Coutts said, we consider that he made an able and important statement which evidently impressed Mr. Brodrick not a little.

ECTOPIC (INTERSTITIAL) PREGNANCY COMPLICATING UTERINE PREGNANCY.

THE complication of uterine by ectopic pregnancy is very rare. In the *New York Medical Journal* of June 27th Dr. J. B. Morrison has published a case which derives additional interest from the fact that the ectopic pregnancy was interstitial. A woman, aged 35 years, who had had one child 11 years before and since then four abortions, came to him on Sept. 4th, 1902, saying that she had had a miscarriage on the previous day. She produced a fœtus of about eight weeks' development which had come away. The uterus was large, of about the size of an orange. On the right an ovoid mass one-half of the size of the uterus and continuous with it was felt. It was thought to be a mural fibroid or an old inflammatory lesion, perhaps a pyosalpinx adherent to the uterus. The cervix was soft and admitted the tip of the index finger. Contrary to advice the patient went away to the country. After 15 days she returned with a history of chill, fever for two or three days, and a foul discharge. Under anæsthesia the uterus was curetted. Some clots and shreds of decidua were removed and hot permanganate of potassium solution was used for irrigation. Two hours later she had a rigor and a temperature of 105° F. In the afternoon there was another chill and the temperature rose from 102° to 105·5°. Agonising pain developed in the position of the right tube and ovary. Morphine was given and cold was applied. The temperature fell to 101°, but on the following morning it rose again to 105° and the pain became as intense as ever and for the first time paroxysmal. Tenderness rendered examination almost impossible. The symptoms pointed to acute peritonitis but the facial aspect between the paroxysms was good, the respiration was not shallow, and the pulse ranged between 88 and 100. The history seemed to negative extra-uterine pregnancy. For two days the temperature ranged between 102° and 104° and the pain was controlled by morphine. On the fourth morning profuse uterine hæmorrhage occurred and the abdominal rigidity disappeared. The mass on the right of the uterus had diminished by one-half and during the examination a fœtus of from 10 to 12 weeks' development was expelled. Under anæsthesia the cervix was dilated. The interior of the uterus was everywhere smooth, but on the right the finger passed into a cavity a little larger than an egg, to the edges of which pieces of tissue appeared to be adherent. On the floor the finger slipped over a smooth mass which proved to be the placenta. As much of it as possible was removed and the cavity was irrigated. The pain ceased entirely. The irrigation was repeated daily for five days and several pieces of placenta came away. The temperature fell and for five days ranged between 99° and 100°. There was a sero-sanguineous discharge. Beckman divides cases of interstitial gestation into two groups: (1) tubo-uterine, in which the communication with the uterine cavity persists, resulting in early abortion into the uterus; and (2) true interstitial, in which the ectopic gestation is separated from the uterine cavity by a muscular septum and the sac ruptures into the peritoneal cavity or uterus. Dr. Morrison's case evidently belonged to the second class. The shreds felt at the orifice of the cavity were probably the remains of the ruptured septum. Perhaps the curetting, by weakening the septum as well as by producing uterine contractions, predisposed to the rupture. Before this occurred the diagnosis was practically impossible.

THE LANCASHIRE COUNTY COUNCIL AND VACCINATION.

AT the meeting of the Lancashire County Council held at Preston on August 6th the following motion, which was recommended by the public health committee, was discussed:—

(*a*) That primary vaccination should be made compulsory; (*b*) that revaccination at or about the age of 12 years should be made compulsory; (*c*) that the control of the carrying out of the Vaccination Acts should be transferred from the boards of guardians to the county councils; and (*d*) that greater facilities for the supply of pure glycerinated lymph should be afforded.

Mr. R. Sephton, the chairman of the committee, in proposing the motion said that the large number of cases of small-pox made additional measures necessary and there seemed to be no doubt that efficient vaccination was the only trustworthy preventive. He stated that out of 416 cases reported during the quarter 280 patients had been vaccinated and there were 11 deaths, while of 109 non-vaccinated patients 15 died. An amendment was proposed by Alderman Snape referring the motion for further consideration. "He thought it would be unwise to adopt a series of such extremely drastic proposals, especially when it was remembered

that a large number of people conscientiously objected to vaccination." The chairman, Sir John Hibbert, also demurred to the motion and the amendment was carried. It is a courteous euphemism to speak of the objections to vaccination as they are ordinarily presented to the magistrates' attention as "conscientious," as they are so often the result of ignorance or a contrary spirit. There are some people who are separated from their more "level-headed" neighbours by a peculiarity of mental constitution which renders them apt to take up with odd notions about many things besides vaccination and to be marked by many eccentricities, most of which may be harmless. If the possible consequences were not so serious the country could afford to let them revel in their fads to their hearts' content, but when their doing so is a constant danger to the health and the lives of the community it becomes a serious question whether the comparatively small number of objectors should be allowed to possess a weapon so dangerous.

THE RESULTS OF THE SURGICAL TREATMENT OF TUMOURS OF THE BRAIN.

Professor M. Allen Starr of New York has published in the *Journal of Mental and Nervous Diseases* for July a valuable paper summarising the results of the surgical treatment of tumours of the brain as practised during the past ten years and drawing the conclusions necessary for our future guidance in regard to diagnosis and treatment. In 1893 he was able to collect from literature 70 cases of tumour of the brain in which an operation had been undertaken. As a knowledge of the possibility of operation became more widespread, says Professor Starr, and the technique of the surgery of the brain more perfect reports of such operations grew more frequent and it was possible to collect 365 cases up to Jan. 1st, 1903. The results of operation in these 365 cases are tabulated as follows:—

Results of operation.	Number of cases of cerebral tumour.	Number of cases of cerebellar tumour.
Tumour removed and patient recovered	152	16
Tumour removed and patient died	51	8
Tumour found but not removed	21	6
Tumour not found	91	20
Total	315	50

There are two elements which render the chances of success in the operation for tumours of the brain better at present than formerly. First, the accuracy of diagnosis is more possible. Given a history of a slowly progressing disease, with symptoms of headache, vomiting, vertigo, sensations of cerebral discomfort, progressive emaciation and feebleness, and optic neuritis, and the only probable hypothesis is the existence of a tumour of the brain. Hence the diagnosis of the nature of the disease is not difficult. Secondly, the possibility of localising tumours has also become more definite within the last 20 years. The occurrence of such symptoms as aphasia, local spasm and hemiplegia, hemianopsia, cerebellar staggering, and mental disturbance would help to locate the tumour, while the absence of these localising symptoms would make it evident that the tumour was inaccessible. The use of electrical saws has during the past three years largely superseded the use of the trephine, gouge, and chisel, and access to the brain can now be obtained in from six to eight minutes after the incision through the scalp has been made. Usually, adds Professor Starr, the brain can be exposed within ten minutes of the time of the beginning of the operation, whereas in older methods from 18 to 25 minutes were often expended in this part of the operation. Moreover, excision of a tumour which may reach to a depth of one or two inches below the cerebral surface, is now freely attempted and performed, and he considers that the statistics of the next ten years will show a very much greater percentage of successes than do the statistics up to the present time. The operation for cerebellar tumours is attended with great difficulty and danger. The surface of the lateral cerebellar lobes accessible to the trephine or the saw is very rarely the seat of a cerebellar tumour. Such tumours lie either in the middle lobe of the cerebellum, directly beneath the tentorium, a point which cannot be reached from the lower surface of the cerebellum, or else they lie in the sulci between the cerebellum and the pons and medulla oblongata upon the base of the brain, a point which is equally inaccessible. For this reason, concludes Professor Starr, failures are numerous in operations for cerebellar tumour, and after a considerable experience he concludes that it seems futile to attempt this operation. Occasionally a tumour may develop in one part of the brain and give rise to localising symptoms of a misleading character referable to another part of the brain. The local symptoms are therefore not infallible in their indication and this may occasionally be a cause of failure. Soft and infiltrating tumours such as gliomata are difficult to remove entirely, and this variety of tumour is liable to recur even if removed in part. The dangers of hæmorrhage and of meningitis are less dreaded to-day than formerly, proper asepsis preventing the latter complication in all cases.

THE HOME FOR EPILEPTICS AT MAGHULL.

THE fourteenth annual report of the Home for Epileptics at Maghull, near Liverpool, includes the history and medical statistics of the institution for the year ending Dec. 31st, 1902. At the commencement of the year there were 138 patients under care and treatment and at the end of the year there were 174. The class of patients received includes persons suffering from epilepsy but not from insanity. Epileptics deemed to be dangerous to themselves or others are not admitted. Instruction is given to the younger patients who are provided with the advantages of a regular day school and winter evening continuation classes. A local fire brigade, composed chiefly of patients, has been in existence for some years and recently on the occasion of a fire occurring in a barn attached to a farmhouse on the adjoining estate, the members of the fire brigade proved themselves efficient and quick in extinguishing the fire and in saving the main farm building itself. The committee of management now owns or rents about 100 acres of land where the patients are trained in agriculture. The farm account showed a profit for the year of £150, a fact which seems to show that by utilising the labour of the inmates the home can be made in a measure self-supporting. The grounds at Harrison Home—a new building erected about a year ago for first-class patients—have been suitably laid out with ample tennis and croquet lawns, shrubbery, and flower beds. A billiard-room and other comforts of a first-class home are provided. The male patients are trained to steady work in the fields and gardens or about the houses and the female patients to house and laundry and garden work. The patients are also trained in basket-making, joinery, choir singing, and brass band music. The subjects taught in the day school and in the evening continuation classes include reading, writing, arithmetic, drawing, singing, history, geography, wood-carving, drill, and kindergarten work. The medical report states that amongst the 94 female patients the total number of fits recorded during the year was 10,103. Of these 5212 were slight attacks. The more

severe fits numbered 4891 and of these 2633 occurred during the daytime and 2258 at night. Amongst the 104 male patients 13,309 fits were recorded during the year, of which number 4164 were attacks of *petit mal*. No serious accidents occurred during the year and there was practically an entire freedom from epidemics. The average duration of epilepsy in patients prior to their admission to the home was found to be 12·7 years. The benefits of the home seem to be much more manifest, says the report, in recent than in inveterate cases of epilepsy.

THE PREVALENCE OF SMALL-POX.

DURING the month ended July 31st only 2 cases of small-pox have been notified to the Essex county council—namely, 1 each in the urban districts of Leyton and Waltham Holy Cross respectively. During the period from July 16th to 31st inclusive 7 cases of small-pox have been reported to the Local Government Board for Scotland—namely, 2 from each of the burghs of Dundee, Gourock, and Greenock, and 1 from the Turriff district of Aberdeenshire. In addition to the cases reported from Gourock, the death of an unvaccinated infant was registered as due to chicken-pox, but from these associated cases it is now regarded as having been caused by small-pox.

ACUTE OBSTRUCTIVE PERITONITIS.

IT is not sufficiently recognised that an acute peritonitis may give rise to symptoms almost indistinguishable from those which characterise acute intestinal obstruction. In both of these conditions there are present severe abdominal pain, constipation, and persistent vomiting, and in both the abdominal muscles are hard and meteorism is present. In fact, so closely do these two diseases resemble each other that on many occasions surgeons have opened the abdomen under the full expectation of finding and relieving a volvulus or some form of internal strangulation, and yet the only condition discovered has been acute peritonitis. The form of peritonitis which most commonly gives rise to this simulation of intestinal obstruction is that resulting from perforation of a vermiform appendix, but it may also develop from perforation of the stomach or intestine, especially if the perforation is very minute. A case, which not improbably belongs to this class, under the care of Dr. Gilbert Kempe of Salisbury and Mr. E. Kempson Brown, appears in the present issue of THE LANCET. The resemblance between the symptoms of the two conditions is very great, and naturally so, for the peritonitis does indeed cause a form of intestinal obstruction, since it puts a stop to the normal peristalsis of the bowel. In what way this paralysis arises is not known, but it may not unreasonably be ascribed to the spread of the inflammatory process from the serous coat to the muscular coat of the gut, or to a toxic action of the products of the peritoneal inflammation on the muscular fibres. Be this as it may, the result is that no onward movement of the intestinal contents occurs. Even the gases present accumulate, increasing as the decomposition advances and thus giving rise to the marked meteorism present, and this in its turn increases the intestinal paralysis by causing over-distension. Although this acute obstructive peritonitis, as it may well be called, resembles so closely the acute intestinal obstruction, yet there are differences which may suffice for a diagnosis between them. In peritonitis the tenderness is more marked, especially in the earlier stages, and the rigidity of the abdominal wall is greater; the vomiting is less severe and less likely to become fæcal in character; the constipation also is often not absolute, for slight liquid motions or flatus may pass. The question of treatment is important. It is useless to attempt to force the intestinal contents onwards by purgatives, for the paralysed muscular coat cannot respond to the stimuli. The judicious administration of strychnine, especially hypodermically, may in the milder cases prove sufficient, but in those more severely affected an enterostomy is indicated. The abdomen should be opened, preferably below the umbilicus, and a piece of the distended small bowel brought to the aperture and after fixation incised, a drainage-tube being inserted if necessary. The nearer the ileo-cæcal valve the intestine is opened the better, provided that it serves to drain the bowel, for the greater will be the absorbent intestinal surface and the less the risk of wasting. As the over-distended bowel regains its normal calibre the palsied muscular fibres will tend to regain their contractility, and when all obstruction has been removed the symptoms arising from it will disappear. These cases are of great importance and a timely operation will effect much in patients apparently moribund.

ALCOHOL AS A DRUG AND AS A BEVERAGE.

Dr. J. J. Ridge, the honorary secretary of the British Medical Temperance Association, writes to us saying that "Dr. Frederick Roberts, in his Address on Medicine, referred to the important international medical manifesto on alcohol, which has been signed by many professors and others at home and abroad. He condemned both it and them as going 'too far,' on the ground that alcohol is, in his opinion, of much service as a medicine in certain cases, and he spoke of the supporters of the manifesto as those 'who absolutely and entirely object to the use of alcohol in any circumstances.'" Dr. Ridge points out that the manifesto in question made no reference to the use of alcohol as a drug but only as a beverage, and that he knows of no member of the British Medical Temperance Association who absolutely and entirely objects to the use of alcohol in any circumstances. Our own opinion, which we have frequently set forth, is that alcoholic beverages are of value in certain forms of disease, and that their value depends not so much upon the alcohol but upon the vinous ethers which these beverages contain, or should contain. No medical man doubts that intemperance in alcohol is an appalling factor in the spread of crime, disease, and poverty, and it is undoubtedly the duty of the medical profession to endeavour to stay the curse of drink by every means in its power. This was a point upon which Dr. Roberts himself laid stress in his address.

WE have received the Report on the Nature, Pathology, Causation, and Prevention of Dysentery and its Relationship to Enteric Fever published by the Commission appointed by the Secretary of State for War in August, 1900.

Dr. T. E. Thorpe, C.B., F.R.S., the principal chemist of the Government Laboratory, has issued his report for the year ended March 31st, 1903, an important document which will receive our early attention.

Dr. Robert Jones, resident physician and superintendent of the London County Asylum, Claybury, has been enrolled an Honorary Associate of the Order of St. John of Jerusalem.

His Majesty the King has been pleased to grant to the National Hospital for the Paralysed and Epileptic, Queen-square, Bloomsbury, a Royal Charter of Incorporation.

THE death is announced of Dr. George Balfour, physician-in-ordinary to the King in Scotland, and the author of the well-known treatise on the Senile Heart.

THE NEW WATER-SUPPLY OF MARGATE.

THE municipal authorities of Margate have now dealt successfully with two leading requirements of sanitation: they have provided for the effectual disposal of the sewage of the town and for an abundant supply of pure water for drinking purposes. In 1890 a comprehensive, and what has since proved to be an efficient, main drainage scheme was provided and on August 6th last the new public water-supply for the town was inaugurated by the mayor. It had been found that the new sewage works caused heavy demands upon the water-supply and not only did the existing supply run short but its quality for drinking purposes seriously deteriorated. It became evident that as the wells were more vigorously pumped to meet increasing needs percolation of the sea water happened, with the result that the drinking water of Margate soon assumed a brackish taste and the Tivoli, the original source of supply, was found to contain as much mineral salts as 172·69 grains per gallon. Attempts were made, presumably for economical reasons, to obtain auxiliary supplies by sinking wells in the neighbourhood of the existing works but with limited success, while no appreciable advance was made as regards quality. The water was brackish, as might be supposed seeing that the water line was reduced so low that the wells, at any rate in the summer season, were nearly always pumped below the sea-level and frequently they were exhausted.

Such a condition of things was obviously a great reproach to a town like Margate which enjoys a deserved reputation in regard to the tonic and invigorating properties of its air. Strictly speaking, to describe a place as a health resort with the knowledge that its water-supply was not only short but objectionable in quality would be incongruous. This aspect of the question was, however, not at first seriously appreciated by the inhabitants of the town nor did they see how their interests could be affected. Happily, however, ignorance as to the serious issues which such a position might involve disappeared, such opposition to reform as existed was broken down, and the authorities at Margate may be warmly congratulated on having brought a scheme promoted in the best interests of the town to a satisfactory conclusion. A considerable amount of prejudice and misunderstanding existed, for when the facts were placed before the electorate, together with the proposal to go to an abundant catchment area some 15 miles away from the town in the direction of Canterbury and a poll was taken in February, 1901, the result was that the scheme was rejected. A year later, owing to a well-organised movement, in which the representatives of the medical profession at Margate had a considerable share, the owners and ratepayers gave their consent by a substantial majority. We heartily congratulate the medical men at Margate upon this important sanitary triumph which after much uphill work they helped to secure. The Wingham scheme, as it is called, was proposed by Mr. Albert Latham, the borough engineer, after he had received an instruction from the corporation to inquire into the subject. This scheme gained the approval of the well-known water engineers, Mr. Charles Hawksley and Mr. Edward M. Eaton, and of the geologist, Mr. W. Whitaker, who in their report wrote: "We consider that this scheme will afford an ample supply of water, good and admirable in quality, and sufficient in quantity to meet the growing demands of Margate for many years to come." Subsequently the Act of Parliament authorising the scheme received the Royal Assent on August 6th, 1902, so that the completion of the undertaking has, officially speaking, occurred exactly within a year of the formal leave to commence work. As a matter of fact, the works were started on Oct. 21st, 1902, and the new water was supplied to Margate for the first time on July 16th, 1903. The entire cost will be about £120,000.

The village of Wingham, where the new pumping station is situated, lies near the outcrop of the line of chalk hills extending from Canterbury to Dover. The new pumping station is about a mile south of the village and is on the main road from Wingham to Adisham railway station on the South-Eastern Railway. Behind the pumping station the hills continue to rise until the ridge is reached at a distance of four miles, the water from the intervening land serving to feed the adits at the station. So far some 1200 yards of adits have been driven and nearly 3,000,000 gallons per day are furnished by them. Powers, however, have been obtained for driving no less than three miles of adits if necessary in order that the supply may be abundant both for present and future requirements. The amount required for the supply of Margate at the height of the season (at the present time) is 1,250,000 gallons per day. The well at the pumping station is sunk to ordnance datum, which is 130 feet below the surface of the ground, and the adits are driven in two directions at that level, rising slightly as they penetrate the ground, running away from the well. It is stated that within a week after the heavy pumping by the contractors' pumps had ceased for the purpose of driving the adit the water rose to within two feet of the height at which it had stood before this heavy pumping was started. This pumping was continued for six months. Special precautions have been adopted by the corporation to prevent the pollution of the environment. It is, however, confidently felt that there is not much risk on this head as the district forming the watershed is very thinly populated. The rising main from the pumping station at Wingham to Margate is 14 miles in length and 18 inches in diameter, this size being considered equal to the demands of the town for many years. The main is carried across the river Stour by being slung to the new bridge recently erected over that river at Pluck's Gutter by the local authorities, including those of the borough of Margate. In arranging a supply from the Wingham district for Margate the corporation entered into arrangements for the supply of the parishes which lie along the route of the main. There are thus 18 parishes and a high and low service tank have been erected for the supply of these parishes, a scheme which involves the laying out of 30 miles of mains, of which nine miles have already been laid, the rest being in progress. The quality of the new water-supply is quite satisfactory according to both the results of bacteriological and chemical analysis, the former having been undertaken by Dr. Klein and the latter by Mr. Sidney Harvey, F.I.C., the analyst to the city of Canterbury and to the boroughs of Dover, Faversham, and Margate. The water is of the usually pure type derived from the chalk and shows an irreproachable organic purity similar to that of the water supplied from chalk wells by the Kent Water Company. The hardness is nearly all removed by boiling, for out of a total of 21·3 grains per gallon only 2·2 grains remain after boiling. Altogether the new water-supply to Margate belongs to the class of excellent drinking water.

Considerable praise is due to those who were responsible for carrying out the engineering arrangements, to those representing the corporation who successfully piloted the Bill through Parliament, and to those who (in spite of the opposition and prejudice which they had to face) persevered in the best interests of the public health in bringing the scheme to an accomplished fact. Margate may be congratulated upon having removed a source of reproach upon its health which sooner or later would have seriously militated against the prosperity which it enjoys.

THE METROPOLITAN HOSPITAL SUNDAY FUND.

THE following are the awards recommended by the committee of distribution for the year 1903:—

GENERAL HOSPITALS.

Charing Cross Hospital, £1083 6*s.* 8*d.*; French Hospital, £346 13*s.* 4*d.*; German Hospital, £617 10*s.*; Great Northern Central Hospital, £1121 5*s.*; Guy's Hospital, £2275; Hampstead Hospital, £227 10*s.*; Italian Hospital, £189 11*s.* 8*d.*; King's College Hospital, £1527 10*s.*; London Hospital, £5546 13*s.* 4*d.*; London Homœpathic Hospital, £268 15*s.*; Phillips' Memorial Homœpathic Hospital, £30 6*s.* 8*d.*; London Temperance Hospital, £388 6*s.* 8*d.*; Metropolitan Hospital, £953 6*s.* 8*d.*; Mildmay Hospital, £314 3*s.* 4*d.*; Miller Hospital and Royal Kent Dispensary, £325; North-West London Hospital, £476 13*s.* 4*d.*; Poplar Hospital, £617 10*s.*; Queen's Jubilee Hospital, £151 13*s.* 4*d.*; Royal Free Hospital, £1300; St. George's Hospital, £1137 10*s.*; S. S. John and Elizabeth Hospital, £276 5*s.*; St. Mary's Hospital, £2600; St. Thomas's Hospital, £292 10*s.*; Seamen's Hospital Society, £1592 10*s.*; Middlesex Hospital and Convalescent Home, £2415 16*s.* 8*d.*; Tottenham Hospital, £390; University College Hospital, £1798 6*s.* 8*d.*; Walthamstow, £92 1*s.* 8*d.*; West Ham Hospital, £565 6*s.* 8*d.*; West London Hospital, £1170; Westminster Hospital, £1451 13*s.* 4*d.*

CHEST HOSPITALS.

City of London Hospital for Diseases of the Chest, Victoria-park, £1105; Hospital for Consumption, Brompton, £1733 6*s.* 8*d.*; Mount Vernon Consumption Hospital, Hampstead, £780; Royal Hospital for Diseases of the Chest, City-road, £487 10*s.*; Royal National Hospital for Consumption (Ventnor), £379 3*s.* 4*d.*

CHILDREN'S HOSPITALS.

Alexandra Hospital for Hip Disease, W.C., £303 6s. 8d.; Banstead Surgical Home, £27 1s. 8d.; Barnet Home Hospital, £48 15s.; Belgrave Hospital for Children, S.W., £115 15s.; Cheyne Hospital for Incurable Children, S.W., £119 5s. 4d.; East London Hospital for Children, Shadwell, E., £951 15s. 4d.; Evelina Hospital for Sick Children, Southwark, S.E., £216 15s. 4d.; Home for Incurable Children, Maida-vale, W.C., £21 5s.; Home for Sick Children, Sydenham, S.E., £140 16s. 8d.; Hospital for Sick Children, Great Ormond-street, W.C., £975; North-Eastern Hospital for Children, Hackney-road, N.E., £290; Paddington green Hospital for Children, W., £297 18s. 4d.; St. Mary's, Plaistow, E., £281 15s. 4d.; St. Monica's, Brondesbury, N.W., £26 15s. 4d.; Victoria Hospital for Children, King's-road, Chelsea, S.W., £476 15s. 4d.; Victoria Home, Margate, £48 15s.; Hospital for Hip Disease, Sevenoaks, £48 15s.

LYING-IN HOSPITALS.

British Lying-in Hospital, Endell-street, W.C., £16 5s.; City of London Lying-in Hospital, City-road, E.C., £100; Clapham Maternity Hospital, £21 15s. 4d.; East-end Mothers' Home, £75 16s. 8d.; General Lying-in Hospital, Lambeth, S.E., £52 10s.; Queen Charlotte's Lying-in Hospital, Marylebone-road, W., £476 15s. 4d.

HOSPITALS FOR WOMEN.

Chelsea Hospital for Women, S.W., £379 5s. 4d.; Hospital for Women, Soho-square, W., £130; Grosvenor Hospital for Women and Children, Vincent-square, S.W., £162 10s.; New Hospital for Women, Euston-road, W.C., £52; Royal Hospital for Children and Women, Lambeth, S.E., £216 15s. 4d.; Samaritan Free Hospital, Marylebone-road, W., £458 12s.

OTHER SPECIAL HOSPITALS.

Cancer Hospital, Brompton, S.W., £325; Middlesex Hospital, Cancer Wing, £525; London Fever Hospital, Islington, N., £458 6s. 8d.; Gordon Hospital for Fistula, Vauxhall Bridge-road, S.W., £21 15s. 4d.; St. Mark's Hospital for Fistula, City-road, E.C., £130; National Hospital for Diseases of the Heart, Soho-square, W., £86 12s. 4d.; Female Lock Hospital, Harrow-road, W., £227 10s.; Hospital for Epilepsy, Paralysis, and Other Diseases of the Nervous System, Regent's-park, N.W., £52 10s.; National Hospital for the Paralysed and Epileptic, W.C., £1148 6s. 8d.; West End Hospital for Diseases of the Nervous System, £216 12s. 4d.; Central London Ophthalmic Hospital, Gray's-inn-road, W.C., £184 5s. 4d.; Royal Eye Hospital, St. George's-circus, S.E., £313 5s. 4d.; Royal London Ophthalmic Hospital, City-road, E.C., £942 10s.; royal Westminster Ophthalmic Hospital, Charing-cross, W.C., £184 5s. 4d.; Western Ophthalmic Hospital, Marylebone-road, W., £54 5s. 4d.; City Orthopædic Hospital, Hatton-garden, E.C., £252 18s. 4d.; National Orthopædic Hospital, Great Portland-street, W., £178 13s.; Royal Orthopædic Hospital, Oxford-street, W., £81 5s.; Royal Sea Bathing Hospital, Margate, £525; St. John's Hospital for Diseases of the Skin, £54 5s. 4d.; St. Peter's Hospital for Stone, Covent-garden, £92 1s. 8d.; Central London Throat and Ear Hospital, Gray's-inn-road, W.C., £54 5s. 4d.; Hospital for Diseases of the Throat, Golden-square, W., £108 6s. 8d.; London Throat Hospital, Great Portland-street, W., £52 10s.; Metropolitan Ear, Nose, and Throat Hospital, Grafton-street, W., nil; Royal Ear Hospital, Frith-street, W., £10 16s. 8d.; Dental Hospital of London, Leicester-square, W.C., £195; National Dental Hospital, 149, Great Portland street, W., £43 6s. 8d.

CONVALESCENT HOSPITALS.

Metropolitan Convalescent Institution, Sackville-street, W., £764 5s. 4d.; Bexhill Convalescent Home, Sackville-street, W., £379 5s. 4d.; All Saints' Convalescent Hospital, Eastbourne, £433 6s. 8d.; Ascot Priory Convalescent Home, £70 8s. 4d.; Barnet, £48 15s.; Brentwood, for Children, £13; Charing Cross Hospital Convalescent Home, Limpsfield, £89 15s. 4d.; Chelsea Hospital for Women Convalescent Home, St. Leonards, £43 6s. 8d.; Deptford Medical Mission Convalescent Home, Bexhill, £52 10s.; Mrs. Gladstone Convalescent Home, Mitcham, £69; Friendly Societies' Convalescent Home, Dover, £75 16s. 8d.; Hahnemann Convalescent Home, Bournemouth, £48 15s.; Hanwell Convalescent Home, £21 15s. 4d.; Herbert Convalescent Home, Bournemouth, £21 15s. 4d.; Herne Bay Baldwin-Brown Convalescent Home, £52 10s.; Homœopathic Convalescent Home, Eastbourne, £21 15s. 4d.; King's College Hospital Convalescent Home, Hemel Hampstead, £70 8s. 4d.; Mrs. Kitto's Convalescent Home, Reigate, £65; Mary Wardell Convalescent Home for Scarlet Fever, £97 10s.; Morley House Convalescent Home for Working Men, £189 11s. 8d.; Police Seaside Home, Brighton, £89 11s. 8d.; St. Andrew's Convalescent Home, Clewre, £130; St Andrew's Convalescent Home, Folkestone, £195; St. John's Home for Convalescent and Crippled Children, Brighton, £37 18s. 4d.; St. Joseph's Convalescent Home, Bournemouth, £70 8s. 4d.; St. Leonards-on-Sea Convalescent Home for Poor Children, £86 13s. 4d.; St. Mary's Convalescent Home, Shortlands, £21 15s. 4d.; St. Michael's Convalescent Home, Westgate-on-Sea, £37 18s. 4d.; Seaside Convalescent Hospital, Seaford, £108 6s. 8d.; Richmond House, Worthing, £27 1s. 8d.

COTTAGE HOSPITALS.

Acton Cottage Hospital, £75 16s. 8d.; Beckenham Cottage Hospital, £26 13s. 4d.; Blackheath and Charlton Cottage Hospital, £86 13s. 4d.; Bromley, Kent, Cottage Hospital, £130; Bushey Heath Cottage Hospital, £48 15s.; Canning Town Cottage Hospital, £54 5s. 4d.; Chislehurst, Sidcup, and Cray Valley Cottage Hospital, £26 13s. 4d.; Coldash Cottage Hospital, £19 10s.; Eltham Cottage Hospital, £80; Enfield Cottage Hospital, £75 16s. 8d.; Epsom and Ewell Cottage Hospital, £70 8s. 4d.; Hounslow Cottage Hospital, £48 15s.; Livingstone Cottage Hospital, £97 10s.; Mildmay Cottage Hospital, £52 10s.; Reigate and Redhill Cottage Hospital, £124 11s. 8d.; Sidcup Cottage Hospital, £52 10s.; Tilbury (Passmore Edwards) Cottage Hospital, £52 10s.; Willesden Cottage Hospital, £140 16s. 8d.; Wimbledon Cottage Hospital, £65; Woolwich and Plumstead Cottage Hospital, £89 11s. 8d.

INSTITUTIONS.

Bolingbroke Hospital, £248 5s. 4d.; Establishment for Gentlewomen, Harley-street, £119 5s. 4d.; St. Saviour's Hospital and Nursing Home, £130; National Sanatorium for Consumption, Bournemouth, £97 10s.; Invalid Asylum, Stoke Newington, £48 15s.; Firs Home, Bournemouth, £21 15s. 4d.; St. Catherine's Home, Ventnor, £27 1s. 8d.; Friedenheim Hospital for the Dying, £525; Oxygen Home, Fitzroy-square, £37 18s. 4d.; Santa Claus Home, Highgate, £89 11s. 8d.; St. John's Hospital, Lewisham, £162 10s.; Home for Consumptive Females, nil.

DISPENSARIES.

Battersea Provident Dispensary, £92 1s. 8d.; Billingsgate Medical Mission, £21 15s. 4d.; Blackfriars Provident Dispensary, £21 15s. 4d.; Bloomsbury Provident Dispensary, £14 1s. 8d.; Brixton, &c., Dispensary, £56 6s. 8d.; Brompton Provident Dispensary, £17 6s. 8d.; Camberwell Provident Dispensary, £65; Camden Town Provident Dispensary, £14 1s. 8d.; Chelsea, Brompton, and Belgrave Dispensary, £57 8s. 4d.; Chelsea Provident Dispensary, £13; Child's Hill Provident Dispensary, £13; City Dispensary, £54 5s. 4d.; City of London and East London Dispensary, £16 5s.; Clapham General and Provident Dispensary, £23 16s. 8d.; Deptford Medical Mission, £23 16s. 8d.; Eastern Dispensary, £52 10s.; East Dulwich Provident Dispensary, £57 18s. 4d.; Farringdon General Dispensary, £43 6s. 8d.; Finsbury Dispensary, £48 15s.; Forest Hill Dispensary, £43 6s. 8d.; Greenwich Provident Dispensary, £27 1s. 8d.; Hackney Provident Dispensary, £13; Hampstead Provident Dispensary, £43 6s. 8d.; Holloway and North Islington Dispensary, £54 5s. 4d.; Islington Dispensary, £59 11s. 8d.; Kensal-town Provident Dispensary, £10 16s. 8d.; Kensington Dispensary, £81 5s.; Kilburn, Maida-vale, and St. John's-wood Dispensary, £43 6s. 8d.; Kilburn Provident Medical Institution, £23 5s. 4d.; London Dispensary, Spital-fields, £17 6s 8d.; London Medical Mission, Endell-street, £108 6s. 8d.; Metropolitan Dispensary, £26 6s 8d.; Notting-hill Provident Dispensary, £14 1s. 8d.; Paddington Provident Dispensary, £32 10s.; Portland Town Dispensary, £21 15s. 4d.; Public Dispensary, Clare Market, W.C., £43 6s. 8d.; Queen Adelaide's Dispensary, £29 5s.; Royal General Dispensary, £27 1s. 8d.; Royal Pimlico Provident Dispensary, £54 5s. 4d.; Royal South London Dispensary, £42; St. George's and St. James's Dispensary, £54 5s. 4d.; St. George's, Hanover-square, Provident Dispensary, £32 10s.; St. John's-wood Provident Dispensary, £45 10s.; St. Marylebone General Dispensary, £54 5s. 4d.; St. Pancras and Northern Dispensary, £34 13s. 4d.; South Lambeth, Stockwell, and North Brixton Dispensary, £43 6s. 8d.; Stamford-hill, Stoke Newington, Dispensary, £65; Tower Hamlets Dispensary, £48 15s.; Walworth Provident Dispensary, £16 5s.; Wandsworth-common Provident Dispensary, £10 16s. 8d.; Westbourne Provident Dispensary, £16 5s.; Western Dispensary, £59 11s. 8d.; Western General Dispensary, £135 8s. 4d.; Westminster General Dispensary, £41 5s. 4d.; Whitechapel Provident Dispensary, £28 5s. 4d.; and Woolwich Provident Dispensary, £19 10s.

Looking Back.

FROM

THE LANCET, *SATURDAY*, AUGUST 13, 1825.

FROM

LECTURES

ON THE

PRINCIPLES AND PRACTICE OF PHYSIC, BY DR. ARMSTRONG.

Theatre of Anatomy, Webb Street.

The following is an Abstract[1] *of Dr. Armstrong's Lectures on Chronic Affections of the Fauces, Air Passages, Lungs, and Heart.*

Pulmonary Consumption.

Dr. ARMSTRONG remarked, that pulmonary consumption was most common in individuals under twenty-five years of age, but that he had seen many cases between that age and thirty-five, and several at a much later period of life than the last-mentioned. He considered the delicacy of young persons as the cause by which they were most predisposed, and observed, that two circumstances were almost always found to concur in the production of pulmonary consumption, namely, a breaking up or giving way of the general strength, and the application of what is called cold, under that condition of the body. He adduced several cases in proof of this assertion, some of which arose in this manner from copious bloodletting, some from spare diet, some from mental anxiety, some from over-exertion, some from night-watching, some from disorders which interrupted the digestion, and others from the like occasions. He said that the same reasoning was applicable to the production of the disease in the lower animals, for that sheep, young horses, and rabbits, being badly fed and exposed to cold at the same time, were apt to become consumptive. Dr. ARMSTRONG considered this view of the subject as of the highest importance to society in a preventive point of view, and especially to those families in which the tendency to consumption hereditarily prevailed; for he contended that this complaint might be prevented in such families by

[1] An excerpt only is transcribed.

maintaining the general strength through a nutritious diet and other regimenal points, and by giving tone to the surface of the body, first by tepid and next by cool sponging or ablution; but in this variable climate he strongly recommended the use of thin flannel, even in the summer, and of fleecy hosiery in the winter and spring, next the surface, where the least suspicion of, or tendency to phthisis existed. The development of phthisis, according to his observation, was always preceded by some change in the functions of the skin, which became more faded than natural, and by some consentaneous irritation of the internal mucous membranes, especially of the intestinal canal and of the bronchial passages; but he admitted that the local irritation which preceded the attack was occasionally in the pleura or lungs.

Dr. ARMSTRONG spoke in strong terms against the empirical use of mercury in the British metropolis for many supposed hepatic or duodenal affections, and was fully confident that, by breaking up the general strength, and by disordering the functions of the skin, it was a very common cause of inducing phthisis, aided by the operation of our changeable climate.

Public Health and Poor Law.

LOCAL GOVERNMENT BOARD.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

The City of London.—Some indication of the remarkable changes as regards population which are taking place in the City of London may be gathered from the fact that on April 1st, 1891, the *night* population was 37,702, whereas in 1901 the night population had fallen to 26,923. But these figures convey a very misleading conception of the great importance of sanitary administration in the City of London as regards the health not only of the metropolis but of that vast migratory population which is dependent upon the City for a livelihood, one which inhabits an area far beyond the limits of what is called "Greater London." Perhaps one of the most important health functions to which the sanitary authority of the City can devote itself is the control of foodstuffs, and in this connexion we are glad to see that attention has recently been directed to the condition of the kitchens of restaurants. Dr. W. Collingridge reports that out of 155 kitchens inspected 76 were in the basement, and although this is by no means uncommon in London generally it is obviously preferable that such places shall be in situations where abundance of light and air can be procured and where ventilation can be carried out by other means than through a street grating which acts as a variety of scraper for the foot passengers passing over it. It is not difficult to understand how food stored, although only for a short time, in these kitchens might be expected to contain bacteria of animal origin, and the fact that in 26 instances the water-closet opened or was ventilated directly into the kitchen is sufficient to make the public eschew such restaurants until these conditions are remedied. We are told that in one case the lobby of the water-closet was used for the storage of meat. This question of the storage of food intended for human consumption does not receive as much attention as it deserves and we should be glad to see some by-laws drawn up for regulating the position of pantries, &c., in all new houses. The City has now followed the example set by Kensington and other London boroughs and appointed a woman sanitary inspector and the medical officer of health is well pleased with the work which she is doing. A certain portion of this work has consisted in the inspection of ladies' waiting-rooms at all the railway stations in the City and we wish that every sanitary authority throughout the country would have these conveniences for both sexes periodically inspected. We are glad to see that Miss Safford, the newly appointed sanitary inspector to the City, has drawn the attention of employers to the importance of providing sanitary conveniences in offices, more especially those in which women are employed as typewriters and clerks. She states that in "the very large majority of these offices there is no sanitary accommodation provided for the women employed." Among other nuisances which obtain in the City those created by smoke are being vigorously attacked. Dr. Collingridge gives an interesting account of the removal of the remains of convicts who had died or been executed at Newgate Gaol. By an order of the Home Secretary the remains of 92 persons were thus removed under the superintendence of the medical officer of health. The experience gained by the exhumation referred to seems to have satisfied Dr. Collingridge that the present method of dealing with the bodies of those who have undergone capital punishment is, to say the least of it, eminently unwholesome. It seems, however, from an interesting passage which is quoted in the report before us from a work on the law of burial that the bodies of murderers were at one time denied burial altogether, and when this prohibition was withdrawn it was enacted that the body of every murderer should either be dissected or hung in chains. The present law upon this subject provides for an alternative to intramural burial and Dr. Collingridge suggests that it might be taken advantage of. We have no space to deal at all freely with the subject of the destruction of unsound food but it may be noted that 382 cartloads of such food were destroyed as trade refuse during 1902. Cases of ice-cream poisoning occurred during the summer and in certain ice-creams subsequently submitted to him Dr. Klein discovered organisms which were highly pathogenic to guinea-pigs. There can be no doubt that much good is likely to accrue from the London County Council (General Powers) Act, 1902, which contains clauses as to the control of ice-cream manufacture. It is largely the conditions under which the materials are stored between boiling and freezing which are responsible for contamination of ices, an inference which is drawn from the fact that most of the pathogenic organisms discovered are non-sporing organisms and as such were likely to be destroyed by the boiling process. Under the regulations now drawn up by the City corporation it is provided that freezing must take place immediately after boiling. Dr. Collingridge's interesting report also contains an account of the action taken by the corporation with regard to contaminated shell-fish—a matter which has recently been the subject of discussion in these columns.

The City of Birmingham.—Dr. Alfred Hill has now made 30 annual reports upon the health of the population of Birmingham, and in this his thirtieth and, we believe we are right in saying, farewell report he has the great satisfaction of being able to announce the fact that the death-rate for 1902 was the lowest ever recorded for the city. Not only has Dr. Hill served Birmingham long and faithfully as medical officer of health, but he has also an unbroken record of 41 years' service for the city in the capacity of public analyst. The population of Birmingham at the middle of 1902 was estimated at 528,181 and the following record of the inroads of death for the three years 1900–02 among the several age groups is sufficiently interesting to merit reproduction:—

Under 1 year	...	...	...	...	...	...	...	222·7	per 1000
Between 1 and 5 years	...	...	...	...	...	...	...	27·5	,,
,, 5 ,, 10 ,,	...	...	...	...	...	...	...	3·9	,,
,, 10 ,, 15 ,,	...	...	...	...	...	...	...	2·1	,,
,, 15 ,, 25 ,,	...	...	...	...	...	...	...	3·7	,,
,, 25 ,, 45 ,,	...	...	...	...	...	...	...	9·2	,,
,, 45 ,, 65 ,,	...	...	...	...	...	...	...	28·1	,,
Over 65 ,,	...	...	...	...	...	...	...	99·4	,,

As Dr. Hill observes, the most important feature in this table is the toll exacted by death from the infant population of the city. Scarlet fever was quite remarkably prevalent during 1902, no fewer than 5044 cases having been notified, a number which gave an attack-rate of 9.39 per 1000 of the population. The fatality-rate for the year was 5·8 per cent. The incidence of the disease varied materially in different wards of the city—i.e., from 14·1 to 4·0 per 10,000. Dr. Hill states that these figures send to show that scarlet fever is as much a disease of the healthy as of the unhealthy wards—i.e., it bears no relation to what are generally regarded as insanitary conditions. A large number of the cases notified were isolated in hospital, as many as 4534 cases having been thus dealt with. As regards pulmonary tuberculosis the death-rates in the different wards ranged from 27·8 to 9 per 10,000, facts from which with those of previous years Dr. Hill infers that "consumption is principally a disease of the less sanitary portions of the city where both the hygenic and social conditions are of inferior character." Dr. Hill devotes considerable space to the housing question, and as to this he remarks: "The most trying need of Birmingham at the present moment is better house accommodation for the labouring classes." He adds that houses of three or four rooms are being continually

removed to make way for business premises, and as no additional houses of this type are erected there is a great difficulty in dealing with the housing question. He advises the city council to erect such accommodation under Part 3 of the Housing of the Working Classes Act. Dr. Hill thinks that consumption and certain other preventable diseases will never be stamped out until new healthy houses have been provided.

Salford County Borough.—Mr. Charles H. Tattersall reports that an outbreak of typhus fever occurred in Salford during 1902. There were altogether 49 cases and of these 15 died. The outbreak appears to have been set going, as usual, through the agency of unrecognised cases and it is not unlikely that the disease may have been introduced from Liverpool. It was only by means of a house-to-house inspection that the course of the disease was checked and the sanitary inspectors were instrumental in bringing to light several unrecognised cases. A teacher in one of the schools was attacked and as she lived in a house with other teachers employed in other schools it was deemed desirable to close all the schools with which such teachers were connected. Generally it was found that those attacked were living under overcrowded, dirty, and poverty-stricken conditions, but nine of the cases appear to have belonged to a class in which those conditions did not obtain. Three of these nine were employés of the corporation—i.e., a vanman, a nurse, and a wardmaid. Under the powers conferred upon Salford by its Improvement Act of 1899 24 samples of milk supplied to Salford were sent to Professor S. Delépine for bacteriological examination and 20·8 per cent. of such samples were found to cause tuberculosis. The farms from which these samples came were visited and the cows were examined. Of the five cows which had yielded the tuberculous milk two had already been slaughtered and milk from five additional cows with suspicious-looking udders was taken for examination. Four of these samples caused tuberculosis.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In 76 of the largest English towns 8257 births and 4139 deaths were registered during the week ending August 8th. The annual rate of mortality in these towns, which had been 13·5, 13·4, and 14·4 per 1000 in the three preceding weeks, declined to 14·3 last week. In London the death-rate was 13·0 per 1000, while it averaged 14·9 in the 75 other large towns. The lowest death-rates in these towns were 5·1 in Burton-on-Trent, 5·3 in Hornsey, 5·7 in Coventry, 6·2 in Southwark, 6·8 in Leyton, 7·1 in Barrow-in-Furness, 7·4 in Bournemouth, and 7·6 in Swansea; the highest rates were 21·0 in Wigan, 21·5 in Burnley, 22·7 in Ipswich, 23·8 in Grimsby, 24·3 in Sheffield, 24·8 in Birkenhead, and 26·6 in Bootle. The 4139 deaths in these towns last week included 717 which were referred to the principal infectious diseases, against 473, 532, and 591 in the three preceding weeks; of these 717 deaths 480 resulted from diarrhœa, 61 from whooping-cough, 57 from measles, 44 from diphtheria, 38 from scarlet fever, 29 from "fever" (principally enteric), and eight from small-pox. No death from any of these diseases was recorded in Hornsey, Hastings, Bournemouth, Devonport, Burton-on-Trent, Handsworth, Smethwick, Huddersfield, or Stockton-on-Tees; the highest death-rates from these principal infectious diseases were recorded in Walsall, Grimsby, Birkenhead, Bootle, Wigan, Warrington, Sheffield, and Newport (Mon.). The greatest proportional mortality from measles occurred in Ipswich, Stockport, and Sheffield; from diphtheria in Nottingham and Wallasey; from whooping-cough in Reading, Rochdale, Sheffield, and Newport (Mon.); from "fever" in Grimsby; and from diarrhœa in Grimsby, Birkenhead, Bootle, St. Helens, Warrington, Sheffield, and Rotherham. The mortality from scarlet fever showed no marked excess in any of the large towns. Small-pox caused one death in Birmingham, one in Liverpool, one in Manchester, two deaths in Halifax, one death in Leeds, and two deaths in Newcastle-on-Tyne, but not one in any other of the 76 large towns. The Metropolitan Asylums hospitals contained 48 small-pox patients on Saturday last, August 8th, against 71, 71, and 66 on the three preceding Saturdays; four new cases were admitted during last week, against seven, 12, and nine in the three preceding weeks. The number of scarlet fever patients under treatment in these hospitals and in the London Fever Hospital, which had been 1710, 1711, and 1726 at the end of the three preceding weeks, had further increased to 1771 at the end of last week; 216 new cases were admitted during the week, against 243, 229, and 237 in the three preceding weeks. The deaths referred to diseases of the respiratory organs in London, which had been 115, 132, and 110 in the three preceding weeks, fell again last week to 107, and were 28 below the number in the corresponding period of last year. The causes of 39, or 0·9 per cent., of the deaths in the 76 large towns were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Salford, Bradford, Hull, Newcastle-on-Tyne, and in 48 other smaller towns; the largest proportions of uncertified deaths were registered in Northampton, Liverpool, and Bury.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been 15·2, 15·4, and 14·7 per 1000 in the three preceding weeks, fell again to 14·6 per 1000 during the week ending August 8th and was 0·3 per 1000 in excess of the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 11·3 in Paisley and 11·6 in Aberdeen to 19·0 in Leith and 20·3 in Greenock. The 478 deaths in these towns included 34 which were referred to diarrhœa, six to "fever," six to scarlet fever, five to whooping-cough, five to measles, and four to diphtheria. No death occurred from small-pox during the week. In all, 60 deaths resulted from these principal infectious diseases last week, against 57, 62, and 63 in the three preceding weeks. These 60 deaths were equal to an annual rate of 1·8 per 1000, which was 0·1 per 1000 above the mean rate last week from the same diseases in the 76 large English towns. The fatal cases of diarrhœa, which had been 22, 34, and 28 in the three preceding weeks, were again 28 last week, of which 21 occurred in Glasgow, four in Dundee, and three each in Edinburgh, Leith, and Greenock. The deaths referred to different forms of "fever," which had been three, six, and five in the three preceding weeks, rose again to six last week and included five in Glasgow. Four of the five fatal cases of measles, and four of the five fatal cases of whooping-cough occurred in Glasgow. The deaths referred to diseases of the respiratory organs in these towns, which had been 73, 79, and 69 in the three preceding weeks, fell last week to 54, and were nine below the number in the corresponding period of last year. The causes of three, or 0·6 per cent., of the deaths registered in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 16·0, 17·5, and 18·3 in the three preceding weeks, was 18·2 per 1000 during the week ending August 8th. During the past four weeks the death-rate has averaged 17·5 per 1000, the rates during the same period being 13·1 in London and 14·3 in Edinburgh. The 132 deaths of persons belonging to Dublin registered during the week under notice were one less than in the preceding week and included eight which were referred to the principal infectious diseases, against six, nine, and five in the three preceding weeks; of these, five resulted from diarrhœa and one each from small-pox, measles, and whooping-cough, but not one from scarlet fever, diphtheria, or "fever." These eight deaths were equal to an annual rate of 1·1 per 1000, the death-rates from the principal infectious diseases last week being 1·7 in London and 1·3 in Edinburgh. The fatal cases of diarrhœa, which had been one, one, and four in the three preceding weeks, increased to five last week. The 132 deaths in Dublin last week included 32 of children under one year of age and 30 of persons aged 60 years and upwards; the deaths of infants showed a decline of eight, and those of elderly persons an excess of 10, as compared with the respective numbers recorded in the preceding week. Six inquest cases and five deaths from violence were registered and 49, or more than a third, of the deaths occurred in public institutions. The causes of seven, or more than 5 per cent., of the deaths registered in Dublin last week were not certified.

VITAL STATISTICS OF LONDON DURING JULY, 1903.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases it

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING JULY, 1903.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated population in the middle of 1903.	NOTIFIED CASES OF INFECTIOUS DISEASE.											DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.										Deaths from all causes.	Death-rate per 1000 living.	Deaths of Infants under one year to 1000 births.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cholera.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Typhus fever.	Enteric fever.	Other continued fevers.	Diarrhœa.	Total.	Annual rate per 1000 persons living.			
LONDON	4,613,812	55	1092	654	—	141	1	17	318	—	2278	6·4	—	112	34	48	85	—	22	—	209	10	1·4	4424	12·5	103
West Districts.																										
Paddington	146,032	—	63	11	—	—	—	—	5	—	79	7·1	—	2	—	—	2	—	—	—	4	8	0·7	121	10·8	93
Kensington	178,409	—	46	17	—	2	—	—	25	—	90	6·6	—	4	2	3	3	—	—	—	6	18	1·3	171	12·5	96
Hammersmith	115,803	1	20	6	—	2	—	—	8	—	37	4·2	—	—	—	1	—	—	—	—	9	9	1·0	103	11·6	95
Fulham	147,780	—	38	18	—	7	—	—	9	—	72	6·4	—	4	—	—	2	—	2	—	14	22	1·9	144	12·7	103
Chelsea	74,169	—	9	9	—	1	—	—	1	—	20	3·5	—	1	—	—	2	—	—	—	2	5	0·9	66	11·6	117
City of Westminster	179,052	20	25	21	—	6	—	—	12	—	84	6·1	—	7	1	2	2	—	—	—	7	19	1·4	163	11·9	136
North Districts.																										
St. Marylebone	131,234	—	31	14	—	6	—	—	10	—	61	6·1	—	—	2	1	3	—	1	—	3	10	1·0	117	11·6	89
Hampstead	85,197	—	25	6	—	1	—	—	2	—	34	5·2	—	—	—	1	1	—	—	—	—	2	0·3	47	7·2	53
St. Pancras	235,716	10	51	42	—	5	—	—	13	—	121	6·7	—	13	3	—	4	—	—	—	5	25	1·4	231	12·8	118
Islington	339,137	3	96	36	—	9	—	2	17	—	163	6·3	—	11	3	2	6	—	3	—	6	31	1·2	285	11·0	84
Stoke Newington	52,089	—	5	3	—	—	—	1	1	—	10	2·5	—	—	—	—	—	—	—	—	4	4	1·0	28	7·0	91
Hackney	224,082	—	52	49	—	24	—	2	27	—	154	9·0	—	6	1	1	6	—	3	—	10	27	1·6	180	10·5	86
Central Districts.																										
Holborn	57,845	1	20	4	—	—	—	—	5	—	30	6·8	—	—	—	—	—	—	—	—	4	4	0·9	54	12·2	75
Finsbury	99,717	—	35	8	—	4	—	2	3	—	52	6·8	—	13	1	1	3	—	1	—	1	20	2·6	140	18·3	116
City of London	24,539	—	3	7	—	2	—	1	1	—	14	7·4	—	—	—	1	—	—	1	—	—	2	1·1	23	12·2	88
East Districts.																										
Shoreditch	117,513	—	21	14	—	5	—	1	10	—	51	5·7	—	6	—	1	3	—	—	—	23	33	3·7	170	18·9	197
Bethnal Green	130,028	—	45	11	—	5	—	—	18	—	79	7·9	—	8	1	—	6	—	—	—	11	26	2·6	167	16·7	126
Stepney	302,153	—	66	33	—	10	—	—	24	—	133	5·7	—	8	3	4	9	—	—	—	21	45	1·9	365	15·7	128
Poplar	169,560	—	54	38	—	7	—	—	14	—	113	8·7	—	2	1	7	—	—	2	—	8	20	1·5	186	14·3	84
South Districts.																										
Southwark	207,369	1	28	25	—	2	—	2	15	—	73	4·6	—	2	2	1	2	—	1	—	14	22	1·4	231	14·5	115
Bermondsey	129,801	—	28	31	—	4	—	1	18	—	82	8·2	—	4	2	4	3	—	1	—	14	28	2·8	161	16·2	171
Lambeth	307,711	5	60	32	—	12	—	—	18	—	127	5·4	—	4	1	3	4	—	1	—	14	27	1·1	299	12·7	98
Battersea	173,422	1	27	27	—	9	—	1	9	—	74	5·6	—	8	—	2	6	—	1	—	4	21	1·6	152	11·4	78
Wandsworth	249,678	7	63	42	—	3	1	—	10	—	126	6·6	—	3	1	6	5	—	1	—	4	20	1·0	180	9·4	62
Camberwell	265,562	5	53	32	—	3	—	—	12	—	105	5·2	—	2	3	3	5	—	2	—	8	23	1·1	218	10·7	93
Deptford	112,537	—	55	61	—	1	—	—	11	—	128	14·8	—	4	2	2	2	—	—	—	8	18	2·1	123	14·2	127
Greenwich	99,824	1	10	18	—	4	—	1	7	—	41	5·4	—	—	2	1	4	—	—	—	2	9	1·2	83	11·5	89
Lewisham	136,405	—	24	30	—	4	—	1	8	—	67	6·4	—	—	2	1	—	—	1	—	1	5	0·5	97	9·3	52
Woolwich	121,478	—	39	9	—	1	—	2	5	—	56	6·0	—	—	1	1	2	—	1	—	2	7	0·8	114	12·2	60
Port of London	—	—	—	—	—	2	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

appears that the number of persons reported to be suffering from one or other of the nine diseases specified in the table was equal to an annual rate of 6·4 per 1000 of the population, estimated at 4,613,812 persons in the middle of the year. In each of the two preceding months the rate had been 6·0 per 1000. The rates were considerably below the average in Hammersmith, Chelsea, Hampstead, Stoke Newington, Southwark, and Camberwell, while they showed the largest excess in Hackney, the City of London, Bethnal Green, Poplar, Bermondsey, and Deptford. The prevalence of small-pox during July showed but little variation from that recorded in the preceding month; of the 55 cases notified last month, 20 belonged to the City of Westminster, ten to St. Pancras, seven to Wandsworth, five to Lambeth, five to Camberwell, and three to Islington. The Metropolitan Asylums hospitals contained 66 small-pox patients at the end of last month, against 47, 60, and 57 at the end of the three preceding months; the weekly admissions averaged 15, against 12, 13, and 12 in the three preceding months. Scarlet fever was slightly more prevalent last month than it had been during June; among the various metropolitan boroughs the greatest proportional prevalence of this disease occurred in Paddington, Holborn, Finsbury, Bethnal Green, Poplar, Deptford, and Woolwich. The number of scarlet fever patients in the Metropolitan Asylums hospitals, which had been 1685, 1738, and 1614 at the end of the three preceding months, had risen again to 1697 at the end of last month; the weekly admissions averaged 236, against 201, 226, and 195 in the three preceding months. The prevalence of diphtheria was considerably in excess of that recorded in the preceding month; this disease was proportionally most prevalent in Hackney, the City of London, Poplar, Bermondsey, Deptford, and Lewisham. There were 340 cases of diphtheria under treatment in the Metropolitan Asylums hospitals at the end of last month, against 760, 808, and 781 at the end of the three preceding months; the weekly admissions averaged 130, against 105, 120, and 119 in the three preceding months. The prevalence of enteric fever showed a further increase upon that recorded in recent months; the greatest proportional prevalence of this disease occurred in Fulham, Hackney, the City of London, Shoreditch, Poplar, and Battersea. The number of enteric fever patients under treatment in the Metropolitan Asylums hospitals, which had been 53, 51, and 83 at the end of the three preceding months, had further risen to 119 at the end of last month; the weekly admissions averaged 18, against five, ten, and 17 in the three preceding months. Erysipelas was proportionally most prevalent in Kensington, Hackney, Holborn, Shoreditch, Bethnal Green, Poplar, Bermondsey, and Deptford. The 17 cases of puerperal fever notified during the month included two each in Islington, Hackney, Finsbury, Southwark, and Woolwich.

The mortality statistics in the table relate to the deaths of persons actually belonging to the various boroughs, the deaths occurring in public institutions having been distributed among the various boroughs in which the deceased persons had previously resided. During the four weeks ending August 1st the deaths of 4424 persons belonging to London were registered; these deaths were equal to an annual rate of 12·5 per 1000, against 15·8, 14·2, and 12·9 per 1000 respectively in the three preceding months. The lowest death-rates in London last month were 7·0 in Stoke Newington, 7·2 in Hampstead, 9·3 in Lewisham, 9·4 in Wandsworth, 10·5 in Hackney, 10·7 in Camberwell, and 10·8 in Paddington; the highest death-rates were 14·5 in Southwark, 15·7 in Stepney, 16·2 in Bermondsey, 16·7 in Bethnal Green, 18·3 in Finsbury, and 18·9 in Shoreditch. The 4424 deaths from all causes included 510 which were referred to the principal infectious diseases; of these, 112 resulted from measles, 34 from scarlet fever, 48 from diphtheria, 85 from whooping-cough, 22 from enteric fever, and 209 from diarrhœa, but not one from small-pox, from typhus fever, or from any ill-defined form of continued fever. The lowest death-rates last month from these infectious diseases were recorded in Paddington, Chelsea, Hampstead, Holborn, Lewisham, and Woolwich; and the highest rates in Fulham, Finsbury, Shoreditch, Bethnal Green, Stepney, Bermondsey, and Deptford. The 112 deaths from measles were 88 below the corrected average number; among the various metropolitan boroughs this disease was proportionally most fatal in the City of Westminster, St. Pancras, Finsbury, Shoreditch, Bethnal Green, and Battersea. The 34 fatal cases of scarlet fever showed a decline of 29 from the average number in the corresponding periods of the ten preceding years; the greatest proportional mortality from this disease occurred in St. Marylebone, Bermondsey, Deptford, Greenwich, and Lewisham. The 48 deaths from diphtheria were less than one-third of the corrected average number; among the various metropolitan boroughs this disease was proportionally most fatal in Kensington, Poplar, Bermondsey, Wandsworth, and Deptford. The 85 fatal cases of whooping-cough showed a decline of 73 from the average number in the corresponding periods of the ten preceding years; the greatest proportional mortality from this disease occurred in Hackney, Finsbury, Bethnal Green, Stepney, Battersea, and Greenwich. The 22 deaths referred to "fever" were 15 below the corrected average number; of these 22 deaths, three belonged to Islington, three to Hackney, two to Fulham, two to Poplar, and two to Camberwell. The 209 fatal cases of diarrhœa were over 500 fewer than the average; among the various metropolitan boroughs the highest death-rates from diarrhœa were recorded in Hammersmith, Fulham, Shoreditch, Bethnal Green, and Bermondsey. In conclusion, it may be stated that the aggregate mortality in London last month from these principal infectious diseases was nearly 61 per cent. below the average.

Infant mortality in London during July, measured by the proportion of deaths among children under one year of age to registered births, was equal to 103 per 1000. The lowest rates of infant mortality were recorded in Hampstead, Holborn, Battersea, Wandsworth, Lewisham, and Woolwich, and the highest rates in the City of Westminster, Shoreditch, Bethnal Green, Stepney, Bermondsey, and Deptford.

THE SERVICES.

ROYAL ARMY MEDICAL CORPS.

THE temporary rank of Captain in the Army granted to temporary Lieutenant M. Taylor is dated July 2nd, 1902.

Captain C. T. Samman joins at Woolwich for temporary duty. Captain H. V. Prynne is ordered to join at Woolwich for duty. Captain F. J. C. Heffernan proceeds to London for a course of study at the Royal Army Medical College. Lieutenant-Colonel H. J. McLaughlin, D.S.O., retired pay, has arrived at York for duty as Recruiting Medical Officer at Bradford.

IMPERIAL YEOMANRY.

Scottish Horse: William Stewart Gray Kidd, late Surgeon-Captain, 1st Scottish Horse, to be Captain. Dated March 30th, 1903. Surgeon-Captain John Anderson, from 5th (Perthshire Highland) Volunteer Battalion the Black Watch (Royal Highlanders), to be Lieutenant. Dated March 30th, 1903. James Anderson Taylor to be Surgeon-Lieutenant. Dated March 30th, 1903.

VOLUNTEER CORPS.

Royal Garrison Artillery (Volunteers): 1st Northumberland: Surgeon-Lieutenant R. A. Nesham to be Surgeon-Captain. Dated August 8th, 1903.

Rifle: 1st Volunteer Battalion the King's Own (Royal Lancaster Regiment): Surgeon-Lieutenant R. J. Morris to be Surgeon-Captain. Dated August 8th, 1903. 4th Volunteer Battalion the King's (Liverpool Regiment): Surgeon-Lieutenant R. Fielding-Ould to be Surgeon-Captain. Dated August 8th, 1903. 1st Volunteer Battalion the Dorsetshire Regiment: Surgeon-Captain W. G. Brett resigns his commission. Dated August 8th, 1903.

ROYAL ARMY MEDICAL CORPS (VOLUNTEERS).

The Glasgow Companies: The undermentioned Captains to be Majors: J. McGregor Robertson (dated August 8th, 1903) and A. Moyes (dated August 8th, 1903).

VOLUNTEER OFFICERS' DECORATION.

The King has conferred the Volunteer Officers' Decoration upon the undermentioned officers of the Volunteer Force:—*North-Eastern District: Artillery:* 1st Newcastle-upon-Tyne Royal Garrison Artillery (Volunteers): Surgeon-Lieutenant-Colonel Arthur Taylor Wear. *Rifle:* 2nd Volunteer Battalion the Sherwood Foresters (Nottinghamshire and Derbyshire Regiment): Surgeon-Major William Sandham Symes and Surgeon-Captain William Moxon. 1st (Hallamshire) Volunteer Battalion the York and Lancaster Regiment: Surgeon-Lieutenant-Colonel John Wise Martin. *North-Western*

District: *Rifle:* 2nd Volunteer Battalion the Lancashire Fusiliers: Surgeon-Major William Pooley.

THE ROYAL ARMY MEDICAL CORPS EXAMINATION.

The entry for the Royal Army Medical Corps at the late examination has been a singularly good one, 72 men having applied in the first instance to compete for 30 vacancies, as has already been announced in THE LANCET. Among the competitors were many men who had distinguished themselves at their respective medical schools, Guy's Hospital bearing off the palm with five men out of the first ten of the successful candidates. The names are as follows:—A. C. H. Gray, M.B. Lond.; D. P. Watson, M.A., M.B., D.P.H. Cantab.; T. S. Dudding; C. H. Robertson, M.B. Lond.; F. M. M. Ommaney; J. S. Powell; R. H. MacNicol, M.B., B.Ch. Dub.; O. Ievers, M.B. Lond.; D. D. Paton, M.B., B.Ch. Edin.; S. L. Pallant; C. R. Bradley; H. H. J. Fawcett, B.A. Cantab.; T. J. Wright; G. A. Kempthorne, B.A. Cantab.; J. S. MacEntire, M.A., M.B., B.Ch. Dub.; S. E. Lewis, M.B., B.Ch. Glasg.; N. D'E. Harvey, M.B. R.U.I.; J. A. Longley, M.B., B.Ch. Vict.; N. S. Dunkerton; P. J. Hanafin, D.P.H. Irel.; A. C. Osburn; M. C. Wetherell, M.B., B.S. Durh.; R. T. Collins; W. MacD. MacDowall; F. J. Turner; H. C. Hildreth, F.R.C.S. Edin.; G. S. Mackay, M.B., B.Ch. Edin.; J. D. Richmond, M.B., B.Ch. Glasg.; F. M. G. Tulloch; and E. M. Glanvill, M.B., B.Ch. Edin. It is to be hoped that this service is at last attracting the attention it deserves and that the prospects of professional advancement which it now offers may prove a continued attraction to a thoroughly good class of young medical men in the future as in the present instance.

INDIAN MEDICAL SERVICE EXAMINATION.

The following is a list of the candidates for His Majesty's Indian Medical Service who were successful at the competitive examination held in London on August 3rd, 1903, and following days. Forty-one candidates, of whom 23 had University degrees, competed for 16 appointments; 29 were reported qualified:—

Name.	Marks.*	Name.	Marks.*
R. Kelsall	3729	E. T. Harris	3159
J. H. Burgess	3646	C. J. Brierley	3118
C. H. Brodribb	3599	E. F. Steel	3097
J. M. C. A. Macmillan. ...	3448	G. W. Maconachie	3064
C. A. Gill	3361	J. B. D. Hunter	3061
W. E. J. Tuohy	3231	A. C. Ingram	3046
G. F. J. Harkness	3253	A. W. M. Harvey	3031
F. T. Owens...	3242	E. W. C. Bradfield	3024

* Marks gained out of a possible total of 5100.

THE ROYAL NAVAL HOSPITAL, STONEHOUSE.

Sir Henry F. Norbury, K.C.B., Director-General of the Royal Naval Medical Department, paid his annual visit of inspection to the Royal Naval Hospital, Stonehouse, on August 4th, 5th, and 6th. He was accompanied by three members of the medical board and was received at the hospital by Inspector-General T. Bolster, R.N. The party were also accompanied by Deputy Inspector-General T. D. Gimlette, R.N., and Deputy Inspector-General R. Bentham, R.N. Sir Henry Norbury concluded his visit by the inspection of the sick quarters of the Royal Naval Barracks, Devonport, and the Royal Marine Infirmary, Stonehouse, and subsequently held a levée of the medical officers connected with the hospital.

Correspondence.

"Audi alteram partem."

THE TREATMENT OF GOITRE BY DISTILLED OR RAIN WATER.

To the Editors of THE LANCET.

SIRS,—In the paper of which I made mention in my last letter I have collected nearly all the known facts about the production of goitre and a short *résumé* may be useful in connexion with Dr. C. A. Rayne's letter in THE LANCET of August 8th, p. 424. The goitrous poison is born of the soil and the soil only. It is absent from rain water. Pliny says, "Tales sunt aquæ quales terræ per quas fluunt." St. Lager relates that the youths of a certain township in France in order to escape military service drank copiously for several months before the arrival of the recruiting authorities from a well the waters of which were notoriously goitrigenous. Their thyroid glands rapidly enlarged and by this means they escaped service. Lombroso relates a similar instance occurring in Lombardy where the formation of goitre was even more rapid: "La fonte del gozzo ove soglione andare i giovani all' epoca della coscrizione onde acquistare *in quindici giorni* quel diffetto che li sostrae dal servizio."

The hardness or otherwise of a water has nothing to do with its goitre-producing faculties. Some of the softest waters are the most goitrigenous. One poisonous water I am acquainted with contains only 0·5 of a grain per gallon of calcium carbonate. No calcium or magnesium salts in water cause goitre nor does the absence of chloride of sodium (a reputed cure). The two theories most in vogue at present are: (1) the bacillary theory of the Italian physicians Lustig and Carle and (2) what I may call the metallic-salts theory advocated by St. Lager in his two series of "Études sur les Causes du Crétinisme et du Goitre Endémique" and the salts which he chiefly makes reference to are the sulphides of iron and copper (iron and copper pyrites). I have not time to go into the *pros* and *cons* of these two theories. I shall content myself with saying that the iron theory has much to be said in its favour. The flushing action of an iron-containing water on a loosely connected gland like the thyroid must be considerable. I have found evidence of iron in many goitrigenous waters, but not invariably, nor is it likely to be present in every sample of water examined. In proof of this iron theory it is a curious fact that in very numerous instances the water coming in contact with pyritous marls is highly goitrigenous. In England the blue marls of the Gault and Wealden undoubtedly produce goitrigenous water. In France the marls corresponding to the above, the "marnes aptiennes" and the "marnes néocomiennes inférieures," are equally dangerous. Both these formations in France contain a superabundance of iron bisulphide and the blue colour of the English marls is, of course, due to disseminated iron pyrites. Goitre is found sometimes on the chalk and chalk-marl in England. We know that calcium carbonate does not produce goitre. What, then, is the cause of the disease in this case? So far as I am aware the only accidental minerals found in these formations are disseminated lime phosphate, glauconite (a hydrous silicate of iron and magnesia) and curiously enough marcasite, which is a very readily decomposable form of iron bisulphide. I could quote numerous instances of the same kind in support of this theory. It may be that some subtle combination of organic matter with the decomposing sulphides may be the true cause of goitre, but much work remains still to be done on this question. Dr. Rayne will find a mine of information on endemic goitre in the works of St. Lager, which, I think, are among the ablest ever penned by a physician. Herein, too, are related many instances of goitres cured by the imbibition of rain water, showing that Dr. Rayne's idea that this was a new method of treatment is not founded on fact, as it has happened in numerous instances in the history of medicine and is now a matter of fairly ancient knowledge. Apologising for the length of this letter,

I am, Sirs, yours faithfully,

LOUIS E. STEVENSON, M.B., B.C. Cantab., F.G.S.

Temple Sowerby, Penrith, August 9th, 1903.

MEDICAL DOCTRINES OF HEREDITY.

To the Editors of THE LANCET.

SIRS,—It is interesting and instructive to find the traditional conflict between the advocates of vitalism and naturalism making its periodical appearance; interesting also, perhaps, to see the vitalist school relinquish none of its ancient ardour or infallibility, and certainly interesting, in particular, to discover no allusion to Professor Weismann by those who so strenuously support his views. This omission on the part of Dr. G. Archdall Reid and Dr. C. R. Niven is unkind, to say the least of it. I confess that I cannot quite understand, however, why this discussion has been reopened, for neither Dr. Reid nor Dr. Niven, in the course of reasoning which leaves the impression of being more subtle than lucid, seems to have advanced anything particularly new. When I took up THE LANCET this morning and found that a correspondence was being carried on in its columns on the medical doctrines of heredity I thought that I would at least come

across some reference to Professor Kassowitz's recent contributions to this subject. I was all the more justified in this expectation as the contributions in question, it would appear, are of a very striking nature. As far as I can understand from mere hearsay Professor Kassowitz denies both the struggle for existence and natural selection. He looks with suspicion on the latter theory as merely the argument for design in its modern disguise, as the latest phase of teleology, or as a substitute for providential supervision. Natural selection, indeed, may be regarded as the scientific conception of the agency by which the wicked are entirely swept away and the good are rewarded—just as Dr. Reid and Dr. Niven would have it. I may say *en passant* that my first impression on hearing of Professor Kassowitz's views was one of disconfidence; it struck me that an attempt was being made to invalidate the authority of Darwinism in order to throw discredit on the Nietzschian adoration of strength and its praise of hero-worship. And I still would think it difficult for a Jewish writer, even on biological or sociological subjects, to refrain from indirectly protesting, like Max Nordau, against Nietzsche's treatment of the Jewish character as a factor in religious and social evolution.

But to return to my subject and Dr. Niven. This writer demands from "Dr. Wiglesworth, or any other, one indisputable instance of the transmission of an acquired trait ..... in multicellular organisms." Not long ago this challenge would have been issued without reservation of any description. Such was the case when Professor J. G. Adami pointed out how Ehrlich's side-chain theory might throw some light on question of heredity. I remember at the time referring to the remarkable experiments in the laboratory of the Naples Aquarium where it had been proved that the distinction between the germ plasm and the somatic plasm in unicellular organisms had not the absolute character claimed for it by Professor Weismann and his school. These investigations were so significant that there need be no hesitation to-day in making some concession to the dualistic prejudices shared by Dr. Niven.

I presume from Dr. Niven's position that he has not seen the note which I published about the same time in the *British Medical Journal* concerning the transmission of acquired characters in dogs. The evidence which I was able to bring forward was, I fancy I am justified in saying, of a very convincing kind. It referred to some observations made at Nice by Dr. Frémont on the consequences of his method of isolating the stomach in dogs. Dr. Frémont could not understand the objections made by Weismannism to the Darwinian theory of the transmission of acquired characters. "I have unfortunately," he remarked, "only too ample reason to feel the truth of Darwin's views. The puppies of the sheep-dogs from which I obtain my supply of gasterine already show a contracted stomach secreting a much smaller quantity of gastric juice than the parents and an enlarged intestine which bulges into the incision I make in my operation. The second generation of my '*opérés*' are useless for any purpose connected with the preparation of gasterine." I added to my note that these statements of my friend were absolutely unprejudiced, because Dr. Frémont had never looked upon the objections of the newer school of evolutionists as sufficiently cogent to attract his attention.

I am, Sirs, yours faithfully,

A. W. GILCHRIST, M.D. Paris.

La Bourboule, July 27th, 1903

To the Editors of THE LANCET.

SIRS,—I am exceedingly sorry that I was unable to reply to Dr. Wiglesworth's letter in THE LANCET of August 1st. As I was out of Great Britain I was not even aware that my own letter had appeared in your columns, nor did I see Dr. Wiglesworth's reply till my return home.

In the beginning, however, let me disclaim any desire or intention of trying to take care of Dr. Reid. No one who has carefully tried to master the teaching of "The Present Evolution of Man" would ever dream of trying to shield Dr. Reid from the attacks of anyone, either inside or outside our profession. As Dr. Wiglesworth correctly observes, Dr. Reid is well able, and I would go farther and say more than able, to take care of himself, and that especially so from anyone who advances arguments like those of Dr. Wiglesworth.

Dr. Wiglesworth contends that I have misconstrued his position. Very well. Put as simply as possible Dr. Wiglesworth believes, and claims that he has proved by his statistics, that parental drinking leads to increased desire for alcohol as well as to increased mental instability in the offspring. That I, as well as those belonging to the newer Darwinian school, deny. Surely that is plain and admits of no misconstruction. It is not denied that the offspring developed from germ cells may be influenced in this or that possible or probable direction by injurious agents—for example, alcohol—circulating in the parents' blood. What is denied is that the changes produced in the offspring are the same as those produced in the parent "except as a coincidence so rare that it may be neglected as a factor in evolution." For example, suppose a man acquires a taste for tomatoes, it is not denied that the eating of tomatoes may influence his germ cells in some possible or probable direction, but it is denied that the offspring arising from these germ cells will have a greater desire for tomatoes than otherwise would have been the case. But more, suppose a man contracts scarlet fever, for instance, and recovers, that is acquires immunity against it, it is not denied that his germ cells are uninfluenced by the toxin circulating in his blood. What is denied, supposing he afterwards becomes a father, is that the child or children developed from these germ cells will have a greater natural resistance to scarlet fever than otherwise would have been the case. The evolution of our race with regard to this special disease has proceeded and is proceeding along lines of an inborn capacity for acquiring immunity against it. Some take the disease severely and die; others take it slightly and recover; while others seem to be totally immune. Those who have not varied favourably tend to be eliminated, leaving the continuance of the race to those who have so varied, that is, who have an inborn immunity or an inborn power of acquiring immunity against the disease. The same is to be said with regard to every other infectious disease. With regard to alcohol or any other poison the same reasoning is to be employed. Suppose a man becomes addicted to alcohol it is not denied that his germs may be influenced in some possible direction. What is denied is that the offspring derived from these germs will have a greater desire for alcohol than they otherwise would have had. If this were so then they would make a different start in life from the parent, because to the child's inborn capacity to enjoy alcohol would have to be added the increase of capacity due to the parents' drinking, and this increased capacity accumulating generation after generation would at last lead to such drunkenness as to result in the extermination of the race. However it has come about, there has arisen in man during his evolution a desire for, or capacity to enjoy, alcohol. The very earliest records tell of man's drinking. There is no nation now sober which was not at one time very drunken. Nor is there one race which never had any acquaintance with alcohol till recent times that is not now drunken. If parental drinking led to increased filial drinking or filial insanity, and as these would increase generation after generation, we would expect that those races which have had the most prolonged acquaintance with alcohol would be the most drunken and would have a bigger death-rate from alcohol than those that have not had this prolonged acquaintance with it. The exact opposite, however, is the case. Did parental drinking lead to filial insanity the same result would ensue—that is, extermination of the race. In the case of alcohol, as in that of scarlet fever, natural selection has been at work eliminating the unfit and leaving the continuance of the race to those who have varied favourably—that is, in the inborn power of tolerating alcohol, or avoiding it, or both. Now it must be insisted upon, in spite of the iteration and reiteration of Dr. Wiglesworth, that no one has said "that the germ plasm is incapable of receiving permanent injury by the agency of poisons circulating in the blood—that is, of course, that the damage to the individual germ cells is never of such a nature as to lead to permanent alteration in the organism which results therefrom."

Dr. Wiglesworth is quite right when he goes on to say, "Either a modification can be produced in the somatic cells of a child as a result of such influence or it cannot. If as a result of the development of germ cells in a vitiated nutrient medium the child resulting therefrom is modified in any direction, however slight, then a definite germinal variation has been produced by the agency of the poison in question." But possibly and probably Dr. Wiglesworth is altogether wrong when he goes on to say further that if the neo-Darwinism contention is correct it may be a "matter of indifference as regards the welfare of such offspring

whether the germ cells from which they arise are developed in a vitiated nutrient medium or the reverse." We at present know too little about heredity to say it is or is not a matter of indifference whether the germ cells are developed in a vitiated nutrient medium or not. However, with regard to permanent alterations being produced in germ cells and the resulting offspring from poisons, &c., circulating in the blood, this is probably correct. For since the child varies somewhat from the parent the germ cell from which he is derived must also have varied somewhat from the germ cell from which the parent was derived and it seems probable (neglecting the effects of conjugation) that this could only have arisen from some external cause—for example, alcohol circulating in the blood. What is denied is that such changes in the blood usually produce changes of such a kind in the germ-cell as result in variations in the offspring derived from these germ cells similar to those produced in the parent organism. For example, suppose a bicyclist develops his calf muscles to a great extent this modification may so alter the blood or nutrient parts of it as to cause an alteration in the germ cell which will, therefore, cause it to develop into an organism different from that which would otherwise have been the case. It is, however, difficult to conceive that this variation in the offspring will be of the same kind as that in the parent. In other words, it is difficult to believe that because the parent developed his calf muscles the child will have better calf muscles than he otherwise would have had. If this ever does happen—that is, if ever an acquired trait is transmitted—it must be so rare that no indisputable instance of it has yet been recorded and thus as a factor in evolution may be neglected.

I pointed out in my last letter that the accumulation and transmission of acquired traits is probably the normal condition of things in low unicellular organisms, as witness the conversion of small-pox into vaccinia by passing the virus through the cow, but that such obtains in multicellular organisms, notwithstanding Dr. Wiglesworth's statistics, there has not yet been any evidence advanced worth the time spent in its examination.

I am more than sorry if I have misread any part of Dr. Wiglesworth's first letter. In that letter he evidently insists that the actions of poisons, &c., on the germs (apart from conjugation) will cause the offspring developed from these germs to vary in certain *definite* directions. To that end his statistics are supposed to prove that parental drinking will cause filial intemperance or filial mental instability. The foregoing part of this letter and my last letter prove that for this contention there is not one iota of justification. Were this so then we would expect every member of a litter of pups or kittens to resemble exactly one another, for the germs have been subjected to the same conditions of environment. We know, however, that no two members of the same litter correspond in any one character or trait.

Dr. Wiglesworth next refers to the "Mohammedan races which show us millions of human beings who are perfectly sober, not by virtue of such an evolution, but in consequence of the operation of religious sanctions." Granted. But though the past history of these races is well known the future has yet to be written. It must also be remembered that this craving for alcohol is not the only desire of man that has been counteracted by his religious systems. Millions and millions of men and women have denied themselves the perfectly natural gratification of sexual love because of their religious systems, and though their sexual instinct was counteracted it was never abolished. Similarly, though the desire for alcohol has been counteracted it never has been abolished. Let those races change their religion (they have done it before and may do so again) to one like the Christian religion which does not demand total abstinence, and it may be the last state of those races will be worse than the first. Again, if these races are Mohammedans and abstainers we must take into consideration the price they are paying in knowledge, belief, art, morals, law, customs, &c.—that is, in culture or civilisation.

I need not follow Dr. Wiglesworth further, for any other question he raises has been answered in the preceding part of this letter or in my previous one. In his last sentence, however, he asks, "Can Dr. Reid or Dr. Niven furnish evidence to show that on the average the children of alcoholic parentage are as stable and healthy as those of parents not so circumstanced?" I respectfully decline to do any such a thing. Dr. Wiglesworth has asserted that parental drinking causes filial intemperance and filial insanity. These statements have, I trust, been shown to be wrong. It is for Dr. Wiglesworth to prove *his* statements. It is no part of my business to prove an exact opposite. I may say, however, that it would be perfectly easy to give the proof he asks, but the disproof of his assertions is the beginning and end of my task.

I am, Sirs, yours faithfully,

Liverpool, August 7th, 1903. C. R. NIVEN.

A MINISTRY OF HEALTH.

To the Editors of THE LANCET.

SIRS,—In reference to a paper which I had the honour of reading in the Section of State Medicine of the seventy-first meeting of the British Medical Association on July 31st at Swansea on the formation of a Health Ministry I am invited to reply to the following points raised by distinguished members of our profession:—

1. That friction would be caused between the proposed Minister and the Local Government Office and a deadlock in public health affairs ensue.
2. That local administration of sanitary matters would become detached from other departments of local government.
3. That the first step towards a proper State sanitary service would be the improvement in status and pay of the medical department of the Local Government Board.

I think that the first two points may be answered together. A Minister of Education has recently been appointed, with obvious advantage, at a time, curiously enough, when local educational and general government has been in process of unification. Thus it is clear that the Ministry of Education can coöperate harmoniously with the Local Government Office though local administration of duties is combined. In Belgium and Canada, in the United States of America, in Germany, in Sweden, and in Denmark the State public health administration is incorporated in departments of agriculture, navy, police, and education, a "medical council," and the Ministry of Justice respectively.[1] The national administration of public health services is, therefore, not confined to central offices of local government in other countries. These facts strengthen the supposition, to my mind, that discord need not arise by a separation of the medical department of the Local Government Board to form the nucleus of a Health Ministry.

As regards the third point, the improvement in status and pay and numbers of the medical department of the Local Government Board is clearly essential to the promotion of a proper State sanitary service. Would this not be one of the many matters to receive the attention of the proposed Ministry of Health?

The support of the medical profession appears to be a *sine quâ non* to the formation of such a central medical department and it is hoped that these questions when raised will receive their close attention.

I am, Sirs, yours faithfully,

Plymouth, August 8th, 1903. F. G. BUSHNELL.

TRIFID STOMACH.

To the Editors of THE LANCET.

SIRS,—In THE LANCET of August 8th, p. 415, appeared an annotation on hour-glass stomach in which, referring to an interesting case of trilocular stomach reported in the same issue (p. 388) you state: "It is, we believe, the first case of trifid stomach on which an operation has been performed." May I draw your attention to a paper which I read before the American Surgical Society on May 8th, 1901, and published in THE LANCET of May 25th, 1901, p. 1458. Here I described a case (Case 22) of trifid stomach under the name of double hour-glass contraction of the stomach on which I performed gastroplasty and gastrolysis and cured the patient who remains well. This case preceded the one you describe as the first by more than four years and although one of the strictures was produced by adhesions and the other by cicatricial contraction the stomach was divided into three distinct cavities. The case is referred to and briefly described in the work, "Diseases of

[1] See also the Case for a Ministry of Health, p. 160 et seq., by F. Scott, F.C.A., citing Palmberg, and Newsholme's Public Health and its Applications.

the Stomach and their Surgical Treatment," p. 189 (Baillière, Tindall, and Cox, 1901).

I am, Sirs, yours faithfully,

Park crescent, W., August 8th, 1903. A. W. MAYO ROBSON.

THE TRINIDAD EPIDEMIC.

To the Editors of THE LANCET.

SIRS,—With reference to the controversy regarding the true nature of the epidemic prevailing in certain parts of the West Indies and alleged in many of the islands to be chicken-pox, I inoculated a monkey with variolous matter taken from a case of so-called varicella at the Colonial Hospital. Four insertions were made by a series of cross scratches as in ordinary vaccination, two being with matter from vesicles six days old and two from vesicles of the seventh day. Four days later there was a distinct raised papule surrounded by a zone of inflammation at the site of each insertion. About the sixth day (the day on which the photograph was taken) vesiculation, though not very perfect, was apparent and scabbing commenced. As it is well agreed that chicken-pox is not an inoculable disease it is to be hoped that in view of the success of this simple experiment the last has been heard, among medical men, at any rate, of the term "varicella" in connexion with the present outbreak of small-pox in the West Indies.

I am, Sirs, yours faithfully,

GEORGE H. MASSON, M.D., B.Sc., M.R.C.P. Edin.

Port of Spain, Trinidad, B.W.I., July 31st, 1903.

*** Dr. Masson incloses a photograph of the monkey showing the vesicles very clearly.—ED. L.

THE ADMINISTRATION OF SOMNOFORM.

To the Editors of THE LANCET.

SIRS,—In THE LANCET of August 1st, p. 323, appeared a description of yet another excellent apparatus for the administration of somnoform. I have found the following plan so simple and to work so well that it appears to me that no special apparatus is required. I take the ordinary Clover's bag, such as every practitioner who is in the habit of giving anæsthetics must possess, and fit it directly on to an ordinary rubber face piece. The latter is lined with wool, leaving, however, the opening into the bag quite free. On this wool the somnoform is syringed and administered in the usual way. The wool lining keeps perfectly in place without any spring such as is required for lint; moreover, it absorbs the somnoform well and is readily removed and replaced. About from three-quarters to two-thirds of the dose marked on the bottle is ample, as a rule, for an anæsthesia of three minutes.

I am, Sirs, yours faithfully,

W. BERNARD SECRETAN, M.B. Lond., F.R.C.S. Eng.

Leeds, August 10th, 1903.

OBSERVATIONS ON MASTICATION.

To the Editors of THE LANCET.

SIRS,—For some few years I have been looking forward to the time when physicians would seriously consider the much-neglected subject of mastication. It was therefore with great pleasure that I read Dr. H. Campbell's recent communications. He has certainly presented arguments which strongly support his contentions, while at the same time he has made a very grave indictment on current ideas of correct feeding. The subject is at the present moment being forced upon us in other ways, for the cry has been raised that the national physique is degenerating. This has arisen from the condition of the men who have presented themselves for enlistment in the army. Among other things we find that a large and increasing percentage have been rejected on account of the shockingly defective state of their teeth. Unfortunately the evil does not end here, for in such cases the mouth becomes a receiving and distributing centre for disease, instead of acting with the stomach as it should, as a veritable death-trap for almost every pathogenic micro-organism which enters it. If the Royal Commission which is likely to inquire into the degeneracy of the national physique would only direct attention to the *physical* properties of the food and carefully consider the ultimate effects of the pap-feeding of children they would confer an incalculable benefit on suffering humanity.

Many have probably observed that the mortality has been increasing from those very diseases which are directly or indirectly attributable to improper feeding—"the death-rates from anæmia, from rickets, and from diarrhœa show an increase"—and this in spite of the facts that we have now a relatively more abundant and varied supply of foods than any previous generation, that we have in general greatly improved hygienic and sanitary conditions, and that there is a diminished birth-rate, so that parents can give more individual care and attention to their children.

Upon what physiological principles are "bread well soaked" in milk and the like advocated? Have children neither teeth nor salivary glands? Is it not preferable to let them soak their bread in saliva in the mouth? Is there any reason for advocating food which neither stimulates the movements of the jaws, nor of the stomach, nor of the intestines, but only tends to lodge, to ferment, to derange the normal secretions, and to give rise to a continuous supply of objectionable products of decomposition? Surely the time has come for a crusade against the soft, "refined" food of the present day. It is within the power of the medical profession to reduce rather than to increase the suffering and mortality from this cause.

I am, Sirs, yours faithfully,

Wimpole-street, W., August 9th, 1903. J. SIM WALLACE.

THE MOTOR-CAR BILL.

To the Editors of THE LANCET.

SIRS,—It is with sincere sorrow that one reads your annotation on the above Bill in THE LANCET of August 8th, p. 415. Since the days "when Cooper's nevvy cut for stone" THE LANCET has always been in the forefront of liberal progress, so that it gave one quite an unpleasant shock to read the old-fashioned ideas expressed in the annotation. I have driven a motor-car for five years in my work and for my pleasure, and can claim to be one of the first medical motor drivers in this country, but there are now very many practitioners using the new vehicle with advantage to themselves and to their patients. May I therefore be allowed to point out one or two matters in which your remarks are open to question?

You say, "Our present highways were laid out for horse traffic ..... and if a motor-car goes faster than 15 or 18 miles per hour the road is being used" for unsuitable purposes. Now this speed is practically slow for a car or even more so for a motor bicycle (which scores of medical men are using daily), and yet it is clear to every unprejudiced person that a car or cycle at this speed is more safe on a high-road than a four-in-hand and is infinitely more under control, for one chief reason that there is only one brain concerned in driving a car. But is the progress of locomotion to stand still because the roads are old-fashioned? Surely the obvious thing is to improve the roads, as, indeed, followed the use of bicycles. Motor-cars are *per se* no more dangerous to traffic than any other form of vehicle, and a motor-car driver is a good deal more careful than a coachman or butcher-boy driving horses; in the motor the driver is usually driving his own car which has cost him from £200 to £1500 and he is not particularly anxious to smash it and himself up by reckless driving, knowing also that he gets no sympathy if he does, whereas the horse driver can be drunk or incapable and if an accident happens "the horse took fright and got beyond control and no blame attached to anyone."

Your annotation says that the cars "cut up the roads." What road is ever so soft as to be cut up by pneumatic or even solid rubber tyres? Why even a private gravel drive is untouched by a motor-car, while a rough hollow is always in the centre where the horses' feet cut up the ground. Again, is there no dust on the road till a car comes? Does no dust arise when a four-in-hand drives along? If the dust is intolerable it shows that the road is badly made and kept and the obvious conclusion is that the roads want modernising to cope with newer methods of locomotion than the "one-hoss shay." As to smell, I find horses quite as offensive as motors; if they are not, why do people insist on the stables being as far as possible from a house? The psychology of the present opposition to motor-cars is precisely the same as that made against the making of railways and, as I well remember, against cyclists when I used to cycle in the "seventies" and early "eighties." Opposition has been the lot of every machine of new principle introduced—the spinning-wheels, power-looms, saw-grinding machinery, railway trains, steamers, bicycles, and now

motor-cars. And then we wonder why our mechanical superiority is being lost to other nations.

It is to be hoped that the Government will fail in passing the Bill. The numbering, registering, and examining of car-drivers with a maximum of 20 miles an hour are ridiculous while the publican and butcher-boy can race on main roads and dash round corners without let or hindrance. From a surgical point of view it would be interesting to know the percentage of accidents due to horses and to motor-cars in this country. We must hope that before long THE LANCET will go forward again as representing Progress rather than going back to the palæo-conservative frame of mind.

I am, Sirs, yours faithfully,

August 11th, 1903. MEDICAL MOTORIST.

P.S.—From a sanitary point of view there is no comparison between the mechanical and animal forms of traction.—M.M.

*** The comparison between the amount of danger and dust caused by the four-in-hand and the motor-car or cycle breaks down. Everyone can see a four-in-hand approaching and can avoid it, while there are 500 or more motor vehicles on the road against one four-in-hand. We have no objection to motor-cars being used on the high-roads so long as they are driven with some regard to the "palæo-conservative" methods of locomotion which still obtain.—ED. L.

THE TERMINALS OF THE ARC LAMP.

To the Editors of THE LANCET.

SIRS,—I have lately been making some experiments with the object of improving the arc lamp in use in the electrical department of St. Bartholomew's Hospital. My senior colleague in the department, Dr. H. L. Jones, suggested to me that the metal indium might possibly be useful as terminals for the arc. The spectrum of this metal, in addition to a brilliant bright line in the blue, shows a magnificent bright urple line near the end of the visible spectrum. As indium proved to be too soft a metal for the terminals of the lamp I thought that it might be possible to combine it with the iron electrodes. With this end in view I had the iron terminals bored with a hole in the centre running in the long axis of the iron from the apex to nearly the base. The holes were then filled with the metal indium which is soft enough to be drawn out into a wire. The arc produced between such terminals is of a gorgeous purple colour, but, unfortunately, owing to the comparatively low temperature at which indium volatilises, the holes in the iron electrodes were soon empty, after the lamp had been running for about 15 minutes. In addition to this I found that indium was much too expensive, for hospital use at any rate. Two small patches of lupus treated with the indium-iron arc appeared to react very quickly, certainly much quicker than with iron only.

I next tried, at the suggestion of Mr. J. H. Gardiner, F.C.S. (assistant in Sir William Crookes's laboratory), an alloy of zinc and aluminium, this combination giving off rays of much shorter wave-length than iron. The arc light of this alloy is of a rich purple colour and shows many bright lines in the visible violet. The alloy, however, has the disadvantage of burning up rather quickly. The reaction produced on patches of lupus with the aluminium-zinc arc is certainly greater than with iron in the same time. I have lately been concentrating the light on the part under treatment with a quartz-calcite lens of short focus, kindly lent to me by Mr. J. W. Gifford of Chard and described by him at the last meeting of the British Association. This quartz-calcite combination brings all the ultra-violet radiation practically to the same focus. I think that the lens will be found very useful in treatment. It is possible that in the future the Hewitt mercury vapour lamp may be of great value as there is absolutely no red in its spectrum. Unfortunately at the present time these lamps are only made in glass, most of the ultra-violet radiation thus being unavailable for therapeutical purposes. If the lamp could be made in quartz or in glass with a quartz end and indium could be introduced into the lamp I think that it might be found very useful in the treatment of lupus. I have ventured to send this letter in the hope that it may be useful to other workers with the lamp.

I am, Sirs, yours faithfully,

August 8th, 1903. HUGH WALSHAM.

NOTES FROM INDIA.

(FROM OUR SPECIAL CORRESPONDENT.)

A Hospital Ship for Invalids from India.—The High Infantile Mortality in Bengal and Bombay.—A Scheme for the Nursing of Europeans.—The Plague Epidemic.—The Cocaine-eating Fashion.

IT is proposed to fit up one of the transports next trooping season partly as a hospital ship to convey invalids to England. The ship will be fitted with 100 beds for serious cases and will make three trips, thus taking home a total of 300 during the season. Invalids who are able to take care of themselves will go by ordinary transport as usual. The facts that over 2000 men are invalided every year, that over 4000 are constantly sick, and that over 750 deaths occur among the British troops should be borne in mind by those who cavil at the additional troops to be placed in South Africa for India's benefit. The available men are at present none too many for the numerous emergencies which might at any time arise, especially when it is considered how many places in India there are to garrison and that there is an obvious limit to depletion.

The high infantile mortality in Bombay and Bengal seems to have attracted the attention of their respective sanitary commissioners, as they both refer to it in their reports. In Bombay city this "massacre of innocents" is accompanied with a large mortality among women of child-bearing age. There is also a high rate of still-births. The infant mortality in the city of Ahmedabad is also brought to notice. In Bengal a sudden increase seems to have begun in 1899. In Calcutta the infant mortality is appalling and in no less than 62 per cent. of the town areas the deaths exceeded the births. The whole province shows the increase of death-rate but no explanation is given to account for it.

With regard to the provision of nurses for Europeans in India, to which I recently referred, it is reported that a scheme of a comprehensive nature under the auspices of Lady Curzon is being worked out at Simla. It is expected that the scheme will have Government support and that an organisation may be created for the supply of nurses in each province.

The plague reports of the week are not so assuring. The mortality has risen in the Bombay Presidency and the total deaths have increased from 1563 to 2087. Outside Bombay only about 500 deaths were reported. In the Punjab the weekly mortality has fallen to 118 and for the United Provinces not a single death was returned. The Punjab has suffered severely. From Oct. 1st last up to July 348,302 cases, with 213,716 deaths, were registered, as against 316,236 cases and 217,940 deaths in the corresponding period of last year. Assuming these figures to be accurate the case mortality works out at 61 per cent. This percentage is low and suggests that the ultimate results of the living cases were not accurately known.

The curious magisterial decision in Bombay concerning cocaine which I reported to you some time ago has, fortunately, on appeal, been reversed and cocaine is now held to be an intoxicating drug. Of late the use of it has become so common that every "pan" seller mixes it with his areca paste. After all, the matter was a legal quibble upon the definition of terms. The chief clause under discussion runs: "Intoxicating drugs include ganja, bhang, charas, and every preparation and admixture of the same and every intoxicating drink or substance prepared from hemp, grain, or other materials not included in the term liquor, but does not include opium." This decision is a very important one, as it will lead to the drug being placed under the Abkari department and the present large unfettered sale will be restricted to those who possess a licence. The great and widespread evil of cocaine-eating in India is not realised either by the public at home or officials in India and the sooner these restrictions are extended the better.

July 24th.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

"Criminal Neglect."

SOME little time since three houses in a street in Ancoats collapsed and two little girls in bed at the time were killed. An inquest, which was twice adjourned, was concluded on July 30th. According to the evidence of Mr.

Holden, the architect appointed by the trustees after the disaster—what a pity he was not appointed before—five houses in a row belonged to the same owners, two of which did not collapse. The outside walls were nine inches and the inside walls were four and a half inches thick, "the ordinary cottage construction." In his opinion the collapse was caused by "the giving way of the chimney" between two of the houses. He did not think there was anything suggesting that blame attached to anyone. "The property, like hundreds of other houses in Manchester, was old and of a poor class." Mr. Price, the architect for the corporation, suggesting that if the property had been examined by an architect its dangerous condition might have been discovered, elicited the statement by Mr. Holden that he had never received such instructions during his more than 40 years' practice. He said also in answer to a juryman that "in property of this construction a falling chimney would be bound to bring other houses down." The city architect indorsed Mr. Holden's views and said that "the dangerous building staff" of the corporation consisted of one man. He said he thought that the corporation was responsible only when the property was dangerous to passengers in the streets. "Not to the tenant?" "No. The corporation had no right to enter a house and could only examine it from the outside." Mr. Price said that he was thinking of suggesting to the corporation the reorganisation of all the work of the building department, of which he had only had charge for 12 months. The whole of the evidence in this case suggests the idea that a great deal of the old and poor property in Manchester is in a condition dangerous to the occupants, and that in some way or other the owners or the corporation or both should exercise closer supervision. One inspector for this kind of property cannot see to the condition of the houses in all the "mean" and other streets of Manchester. The coroner thought that the jury would be warranted in finding that there was negligence in the management of the property, "culpable, if they liked, but not necessarily criminal." To constitute the latter "they must be satisfied that the accident was the direct and not a remote result of that negligence." After deliberating in private the jury found "that the children died from suffocation caused by the collapse of the buildings" and that there were criminal neglect on the part of the agent and culpable neglect on the part of the corporation inspector. This was really a verdict of manslaughter against the agent who appeared at the city police-court in the afternoon charged with manslaughter and was remanded on bail. It seems as if the individual were to suffer for the faults of the system. The above story is calculated to make property owners, and especially the owners of the squalid dwellings too common in the poor districts of our towns, and our corporate authorities more alive than they have been to their own duties and responsibilities.

The New Infirmary and Medical Education.

On July 31st the ceremony of conferring degrees of the Victoria University took place in the Whitworth Hall. All the degrees were those of Bachelor of Medicine and Bachelor of Surgery, with one exception, the conferring of the Master of Arts degree on a lady from University College, Liverpool. In the absence of Lord Spencer, the Vice-Chancellor, Dr. Alfred Hopkinson, LL.D., Principal of Owens College, opened the proceedings and in the course of his remarks spoke of the new infirmary which is so soon to be built near Owens College and of the influence which its greater proximity will exercise on medical education. He said that it was impossible not to take the opportunity of expressing the satisfaction of those interested in medical education at the prospect "of a new infirmary being very shortly erected with adequate facilities for clinical study, and that owing to these increased facilities, the proximity of the new infirmary to the College, and the hearty coöperation of the governing bodies, both lay and professional, of the two institutions there will soon be advantages offered for medical study in Manchester second to none in any part of the country." He recognised the fact that medical education, although based on broad and thorough scientific preparation, must be of a completely practical character, and that it is probably impossible to overrate the importance of the clinical side of it. He hoped that the coöperation of those engaged in imparting and increasing scientific knowledge and of those daily engaged in practice would result in further additions being made to our knowledge of medical science and art.

August 11th.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

The University of Liverpool.

THE first meeting of the Council of the new University of Liverpool was held in the Senate room at University College, on August 4th, the Chancellor, the Earl of Derby, K.G., presiding. The Chancellor laid upon the table the Charter of the University and said that the occasion that had brought them together—the first meeting of the new University Council—was one of great importance. The work that lay before them would demand all the resources of their wisdom and strength, and while they must act boldly and hopefully they must at the same time act prudently and cautiously. They must resolve that they would exercise due forethought in carrying out the work which they had been appointed to undertake and must insure that everything should be done thoroughly and efficiently. They had the satisfaction of knowing that throughout the course of the University movement they had been cordially supported by the goodwill of their fellow citizens and that in parting from their colleagues in the Victoria University they had parted on the most friendly terms. For himself he fully recognised the honour that had been conferred upon him, by the nomination of his Sovereign, as the first Chancellor of the new University, and he pledged himself to the utmost of his power to help to lay the foundations of a university in which the studies of arts, science, and other subjects should receive all possible expansion, and should be so organised as to earn for the University the position of power and privilege now conferred upon it. Mr. E. K. Muspratt was appointed president and Mr. J. W. Alsop vice-president of the University Council and a committee was elected to draft ordinances and regulations as required by the statutes. It was also agreed that an inaugural ceremony should be held in St. George's Hall on some day in the autumn and a subcommittee was appointed to confer with the Lord Mayor and to arrange details of the ceremony.

Woolton Convalescent Institution.

At the twenty-ninth annual meeting of the supporters of the Woolton Convalescent Institution held in the Gladstone Hall of the institution under the presidency of the Lord Mayor, who was accompanied by the Lady Mayoress, the Lord Bishop of the diocese, Sir William Tate, Bart., and others, the secretary submitted the annual report, in which the council recorded with pleasure another satisfactory year of progress and work in the institution. The number of patients was steadily maintained, the figures for the year being 2736; the contributions received showed a further increase in annual subscriptions, which reached £1045, both figures being the largest on record. The liberal grant to subscribers of free and partly paid admission forms inaugurated some years ago is undoubtedly an influence which has helped the success and prosperity of the institution. The death of Mr. William Rathbone caused a vacancy in the office of vice-president. In response to the unanimous request of his colleagues on the council Sir William Tate, accepted the position and also continued the duties of treasurer. He resigned the chairmanship of the council, to which Mr. William Oulton, C.C., was unanimously elected. Sincere thanks were accorded to all subscribers and donors and also for the special donations. The legacies received during the year had been large and were as follows: from the executors of the late Mr. Henry Tate, formerly of Allerton, £1000; from those of the late Mr. James Barrow, £250; and from those of the late Mrs. Charles Turner, £200. The greater part of these legacies have been invested and a balance has been retained in order, if thought desirable after due consideration, to carry out a long contemplated improvement in the grounds of the institution. It was proposed to lay out the land in front of the building by making walks and flower-beds and planting shrubs and trees, and so giving additional attraction by beautifying and utilising more fully the extensive grounds; this was a matter of great importance in a convalescent home as an inducement to patients to remain as much as possible in the open air, a most valuable adjunct to treatment. Since the close of the year the committee of the Liverpool Transvaal War Equipment Fund had, through the Lord Mayor, contributed £500 for the endowment of a bed to be

called "the Transvaal War Equipment Fund Bed" and to be used for the benefit of sufferers through the war or other local deserving cases, thus showing in a practical way the appreciation of the efforts to render service to the soldiers invalided in 1900. The financial statement showed that the total receipts were £5926, and that a balance had been reserved for improvements to the pleasure grounds (as referred to in the report) of £562 5*s.* 1*d.* There were now eight endowed beds and 14 free beds, among the latter being one supported by the West Derby board of guardians. The thanks of the subscribers were accorded to Dr. J. M. Chisholm, the visiting physician, and to the household and nursing staff.

August 11th.

WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

Bristol Health Report.

IN his report for 1902 the medical officer of health of the city of Bristol, Dr. D. S. Davies, deals at some length with the housing of the working classes. Though there are in Bristol no large concentrated slum districts lending themselves to a sweeping comprehensive scheme for clearing out an insanitary area there are still isolated groups of houses and courts which require to be dealt with. When reporting in the year 1896 upon the best means of providing houses for those persons who were turned out of dwellings which were condemned as uninhabitable, the medical officer of health and the city engineer deprecated the erection of block dwellings, flats, or similar buildings tending to crowd a large population upon a small area. The corporation, no doubt having this expression of opinion in mind, has recently erected in different parts of the city 60 tenements, 22 of two rooms and 38 of three rooms. The rent of the former is 3*s.* 3*d.* per week and that of the latter is 4*s.* 6*d.*, while the number of inmates is restricted to three and five respectively. These houses are built in rows and are two storeys high. There is one tenement on the ground floor and the other on the first floor, the latter being approached from an iron balcony, three feet wide, which runs the whole length of the building and which is reached by a wide open fireproof staircase in the centre of the row. There is a large open yard at the back of the houses and each tenement has a washhouse and a water-closet. The bedrooms contain about 1000 cubic feet of air-space and each one has a fireplace. A municipal lodging-house to accommodate 120 persons is also being erected in Bristol at a cost of about £7000. There are at present in the city 35 registered common lodging-houses with accommodation for 819 persons. When discussing the retention of underground bakehouses in connexion with Section 101 of the Factory and Workshops Act, 1901, Dr. Davies says that the only logical way of dealing with such premises would be forthwith to condemn every one at present existing, as the Act itself permits no new one. In considering which of the 51 underground bakehouses should be retained the corporation has, however, decided to adopt suggestions which very closely follow those agreed upon by the Incorporated Society of Medical Officers of Health.

Action for Damages against the Hereford Corporation.

In view of the possibility of "return" cases of infectious disease many sanitary authorities which possess isolation hospitals are now in the habit of discharging patients only on the understanding that no responsibility attaches to the authority in the event of other cases of the disease occurring among members of the patient's household. The necessity for taking this precaution has been emphasised by the recent verdict of a Hereford county-court jury which awarded £30 damages to the father of a child said to have been negligently discharged from the corporation fever hospital whereby several other children contracted scarlet fever. The circumstances of the case differed somewhat from others in which damages have been paid by sanitary authorities. The patient in question, who remained in hospital for eight weeks, was attended throughout the illness and was discharged, not by the medical superintendent of the hospital but by a private practitioner. On the day of discharge the child was given a bath, the clothes were disinfected, and the child then returned for about ten minutes to the matron's room, which communicates with the hospital proper by a corridor. It was contended that during this period the patient became re-infected and upon returning home infected other children. The county-court judge in directing the jury laid great emphasis on the absence of a discharging block at the hospital and the non-provision of this accommodation evidently influenced the jury in its verdict.

The Meeting of the British Medical Association.

The camp which was organised at Swansea during the meeting of the British Medical Association was so pronounced a success that this method of supplementing hotel accommodation will no doubt be a feature of future meetings. At the Mumbles where the Swansea camp was situated the 20 bell tents and a mess tent were pitched in an inclosed two-acre field having a southern slope. Within 100 yards was Limeslade Bay, a tiny cove with a sandy bottom where bathing could be indulged in. There was no water-supply on the site of the encampment but sufficient for all requirements was brought in carts from a distance of one and a half miles. The general comfort of the campers was looked after by two camp orderlies from the 3rd Glamorgan Rifle Volunteers and the catering was undertaken from one of the Swansea hotels.

The Cossham Memorial Hospital.

The first meeting of the trustees of the scheme sanctioned by the Court of Chancery for the administration of the Cossham Memorial Hospital was held on August 5th under the presidency of the Lord Mayor of Bristol. Plans were approved of for the erection of a hospital at Kingswood Hill, near Bristol. The institution will provide accommodation for 44 patients and will be surrounded by about four acres of land. The cost of building and furnishing is estimated at £23,300 and the remainder of the late Mr. Cossham's estate, which is about £80,000, is to form an endowment for the charity.

A Medico-legal Cricket Match.

A cricket match was played at Cardiff on August 7th between a team of medical men and solicitors respectively and resulted in a draw very greatly in favour of the medical players.

August 11th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Chief Secretary and the Irish Medical Association.

THE conflict between the Local Government Board and the Irish Medical Association becomes more critical every week. Dr. L. Kidd of Enniskillen, President of the Association, has written to the Dublin papers in reference to the Chief Secretary's reply to a question by Mr. O'Brien, M.P., in which the former is reported to have said:—

> I think their claims would be more deserving of recognition if they abandoned such practices and awaited the report of the Viceregal Commission which is looking into the amalgamation of unions and other Poor-law matters.

And again:—

> They would be more likely to attain their object if, instead of pursuing these practices, they awaited the report of the Commission.

Dr. Kidd inquires whether the Chief Secretary has forgotten his answer to Dr. E. C. Thompson, M.P., on March 25th, when he stated:—

> The grievances of the Irish Poor-law medical officers was another matter and any amendment of the law on this subject would be highly contentious. He should therefore be sorry to see it brought within the scope of a Commission through which it was hoped to ensure a more economical administration of the Poor-law.

Dr. Thompson himself also writes on August 1st and the following is an extract from his letter:—

> I have lying before me Mr. Wyndham's reply to a letter of mine distinctly refusing to enlarge the scope of inquiry of the Viceregal Commission so as to enable it to consider the grievances of the doctors.

He now proposes to ask the Chief Secretary to appoint a Royal Commission to report upon the amalgamation of unions and other Poor-law matters including the claims of the union medical officers of Ireland.

The Nursing Trouble at Granard.

Dr. Joseph Smyth, Local Government Board inspector,

after the examination of many witnesses concluded his inquiry on August 6th. It dealt with the circumstances of Dr. Kenny's suspension and the death of a patient in the union infirmary while the suspension was in force. Many other contentious matters were also investigated. Pending the report of the Local Government Board Mr. Wyndham has made an important statement in the House. Mr. Farrell, M.P., drew attention at great length to the circumstances in which the nuns had resigned their position as nurses to the Granard union hospital and appealed to the Chief Secretary to use his influence to bring about an amicable arrangement of the difficulty. Mr. Wyndham said that they would not have had this friction if the nuns had had a trained assistant all the time but the complaint was not against the nuns, it was against the system. Some of the necessaries for proper nursing were not there and trained nurses ought to have been appointed. It might be that Dr. Kenny, the medical officer, had been unfortunate on many occasions with the way in which he made his recommendations. Generally in Ireland the nuns were doing good service at great personal sacrifice and their ministrations above all were acceptable to the patients. It would be, in his opinion, a great loss to the people of Ireland if for any reason the services of the nuns were withdrawn, but they must remember that if the poor of Ireland in all cases were to be properly attended to they should have trained nurses. If Dr. Kenny expressed regret for any offence he might have unintentionally given these ladies why should they not go back to carry out their duties and their ministrations to the poor? Thus an amicable solution of the difficulty might be arrived at. Dr. Kenny has hitherto been supported by the Local Government Board. After the first sworn investigation at Granard the guardians (who acted apparently in concert with the nun nurses) were severely censured for their attempt to interfere with the union medical officer "in the conscientious discharge of his professional duties." Dr. Kenny has never been censured or found fault with by the Board. It would seem now that he is about to be dropped. Hence probably the chief leading article in the most moderate and most respectable of Dublin newspapers published on August 10th and very strongly supporting him. He publicly denied that he had ever given any offence to the nuns. His position now after Mr. Wyndham's statement rather reminds one of that of the prisoner who was acquitted of a crime but warned not to do it again.

Health of Belfast.

From the report presented to the corporation of Belfast on August 4th it appears that between June 14th and July 18th 283 cases of zymotic disease have been notified—viz., 95 of typhoid fever, 84 of simple continued fever (whatever this is), 51 of scarlet fever, 28 of erysipelas, 15 of diphtheria, six of membranous croup, and four of puerperal fever. The death-rate per 1000 is 1·6 for zymotic diseases, 6·5 for chest affections, and 18·6 for all causes. The cases of typhoid fever notified are not more numerous but the deaths therefrom have largely increased. The deaths from measles are more numerous, the deaths from chest diseases have decreased, and the deaths from diarrhœa have doubled.

The Belfast Hospital for Skin Diseases.

At the annual meeting of the friends of this charity, held on July 31st, it was reported that the number of patients treated during the year was 903 and 26 severe cases were admitted into the wards for treatment. The lupus lamp has been in work and the medical staff report satisfactory results. There is a balance to the credit of the institution of £205 3s 8d.

The King and Londonderry County Infirmary.

During his visit to Londonderry His Majesty and Queen Alexandra visited the County Infirmary, where they were received by Mr. W. Tillie, D.L., His Majesty's Lieutenant of the city and chairman of the board of management. An address having been presented and the King having replied the members of the medical and surgical staff were presented as follows: Mr. Walter Bernard, Mr. T. McLaughlin, Dr. Joseph E. Miller, Mr. Joseph Byrne, Mr. J. D. G. Cooke, and Dr. Herbert W. Cunningham. The King then laid the foundation-stone of the new building which bears this inscription: "This tablet has been placed here on the occasion of the visit of their Majesties King Edward VII. and Queen Alexandra, Tuesday, July 28th, 1903." Their Majesties subsequently visited the wards, showing special interest in the children's wards, and they spent considerable time in speaking to the little patients in their cots. After having signed their names in the distinguished visitors' book their Majesties subsequently left amidst the strains of the National Anthem.

Medical Men and Guardians.

At the usual weekly meeting of the Omagh board of guardians, held on August 1st, a discussion took place in reference to the differences at present existing between the dispensary medical men and the guardians. A motion was subsequently proposed:—

That in the opinion of this board, the strained relations between the Medical Association and the different boards of guardians in Ireland should be settled by arbitration and that a copy of this resolution be sent to the Local Government Board and to the *General Advertiser* and medical press.

This was strongly opposed, one of the guardians, Mr. P. Gormley, saying that in America the medical man's fee was only 10s for attending the richest man in the world, "while in Glasgow the highest doctor would go from one end of the city to the other for half-a-crown." He contended that the Medical Association was an illegal one and he added, "It was in gaol they ought to be. The association should be put down, in his opinion, like the Land League." The chairman said, "He for one would never knuckle down," to which there was a chorus of "Nor I," and the motion was withdrawn. The discussion indicates that the dispensary medical officers in Ireland must remain united in their demands.

The Killoughey Dispensary.

At a recent meeting of the Tullamore guardians a letter was read from the Local Government Board directing the guardians to request Dr. McCarthy to take up the duties of medical officer of the Killoughey dispensary district and in the event of his refusing to do so a sworn inquiry was to be held with a view to his dismissal under seal, which would mean that he would never obtain a position again under the Local Government Board. Is not this intimidation on the part of the central authorities simply because Dr. McCarthy, in his own interests and in the interests of the profession, declined to act?

Salaries of Dispensary Medical Officers.

At a meeting of the Ballymoney guardians on August 7th the chairman proposed the following motion:—

That as in the opinion of this board the present discussion between members of the medical profession and boards of guardians is calculated to have an injurious effect on the Irish sick poor and to produce ill-feeling where none before existed, it is hereby resolved that the Local Government Board be requested to use their influence so that the Viceregal Commission on the amalgamation of workhouses be instructed to inquire into the matter at issue and to take evidence from qualified witnesses on both sides in order that no injustice be done to ratepayers or others interested.

The motion was deferred for a week in order to give all the members proper notice. In Ballymena Mr. R. Currie has been given a month's holiday and on August 8th the relieving officer reported that he could not find a medical man in that town who would act as locum-tenent under four guineas a week. Dr. W. R. Davison wrote that the present struggle was not one between the Ballymena board of guardians and the medical officers of the Ballymena union, but between the Poor-law medical officers as a body and the conditions of a service which they contended were out of date and very unfair to them. In other unions the guardians are objecting to give the full month's salary and to allow more than two guineas per week for the locum-tenent.

August 11th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

White Leg in Cases of Typhoid Fever and a Salt-free Dietary.

THE quantity of chloride of sodium eliminated in the urine in cases of typhoid fever is much smaller than in the normal condition. This is a well-known fact, but it has been considered that the chlorides are retained in the blood. This is not so. The chloride of sodium is retained by the cells of the tissues. This can be proved by giving to a typhoid fever patient a dose of chloride of sodium. This chloride is not eliminated in the urine, neither does it remain, as analysis will show, in the blood; it is absorbed by the cells.

This retention of chlorides has been considered as a sort of cellular action undertaken with a view to the protection of the organism, the chloride of sodium seeming to augment the osmotic tension of the cells and making them less permeable to the toxins. This hypothesis, however, which has not yet been demonstrated, contains in any case only part of the truth. It is certain that the elements of the connective tissue allow themselves to be penetrated by the salt and resist the invasion of toxins so much the less as their vitality is the more altered. The demonstration of this fact is obvious if the pathology of the painful white leg of typhoid fever patients is considered. This complication is very fairly frequent in typhoid fever and is notable for its long duration. Quite recently M. Widal has shown that in patients affected with nephritis the œdema of the cellular tissue bears definite relation to the quantity of chloride of sodium absorbed by such patients and that it is possible to make the œdema disappear by a salt-free diet.[1] M. Chantemesse at the meeting of the Academy of Medicine held on July 28th read a paper in which he said that it had occurred to him that patients suffering from typhoid fever who retained their chlorides approached closely in this matter to those suffering from chronic nephritis, and that the painful white leg from which they suffered, although it appeared to have its origin in purely mechanical conditions, probably belonged to the same pathogeny. So he put them upon a salt-free diet, including meat, soup, *eau albumineuse*, and bread and he tried this diet upon six patients who all suffered from typhoid fever together with painful white leg. In two of these cases the white leg had lasted for from six weeks to two and a half months, while the limb showed considerable œdema with dilatation of the superficial veins and no tendency to get any better, despite the fact that the patients were kept at rest. Two other patients exhibited a more recent form of phlegmasia accompanied with acute pain, and the swelling of the leg had come on consecutively to a thrombosis of the saphena vein which had occurred some three or four days previously. In these two last patients, despite the presence of a venous cord, there was no white swelling. The condition had been arrested at its very beginning by the modification of the diet. In all the six patients a salt-free diet brought about a rapid amelioration of their condition. M. Chantemesse thinks that he is able to conclude from these experiments that the painful white leg of typhoid fever is the result of an intoxication of the limb by chloride of sodium. The venous thrombosis only plays a predisposing part in the causation. Finally M. Chantemesse cited the case of an elderly woman who suffered from thrombosis at the level of an inflamed varix in the lower limb and in whom a salt-free diet brought about rapid disappearance of the pain and swelling in the leg. He, however, declared himself ignorant whether the same etiology could be applied to the phlegmasia alba dolens which is seen in those newly confined and in cachectic subjects.

Medical Aid in Algeria.

The Governor-General of Algeria, M. Jonnart, has set on foot throughout Algeria special infirmaries in which the inhabitants might be cared for by Mussulman nurses and their food prepared for them by their co-religionists. Up to the present 25 infirmaries of this kind have been built. With regard to patients for whom there is no necessity to stop in the hospital the care has hitherto been given to them by means of gratuitous consultations organised among the various tribes. The medical man went on a fixed day to the Arab encampments and there dealt out the necessary medicine, but it was found to be almost impossible for the medical man to treat Arab women. In Algiers this inconvenience has been got over by instituting a series of gratuitous consultations which were in the hands of a fully qualified woman. In this way excellent results were obtained, native women and children presenting themselves to the number of 50 or 60 at each consultation. As a result of this the Governor-General has decided to extend the principle of gratuitous consultations given by a female medical officer to all the principal towns of Algeria and he has made an appeal to women who happen to have the degree of doctor of medicine. Pecuniary assistance will be accorded to native students so as to induce them to undertake the study of medicine and all the expenses resulting from the organisation of these different services will be discharged without any increase in the Algerian Budget thanks to the slightly increased tax on the natives, a tax which has hitherto been applied exclusively to works of charity, of hygiene, and of general utility in so far as regards the natives.

[1] THE LANCET, July 4th, p. 61.

The Transmissibility of Syphilis to Animals.

One of the great obstacles to the study of certain diseases lies in the fact that these diseases are peculiar to man and that animals resist them. Up to the present syphilis has been such a complaint. M. Metchnikoff, however, at the meeting of the Academy of Medicine which was held on July 28th, gave the results of some experiments which he had recently made in conjunction with M. Roux in the inoculation of anthropoid apes with syphilis. After two trials the experimenters succeeded in inoculating a young female chimpanzee with syphilitic virus taken from a human chancre. At the end of 26 days, the regular term of incubation, there appeared at the point of inoculation a typical chancre, allowed to be such by M. Fournier himself. The significant points were the induration, the shotty gland in the neighbourhood, and the duration of the incubation. Four or five weeks hence secondary symptoms may be expected. But even if no secondary symptoms appear, which is quite possible, for the receptivity of the anthropoid ape is but feeble, the fact of the successful inoculation remains. M. Fournier, who has studied the question for many years without being able to arrive at a successful result, went to the meeting to add his testimony to the success of M. Metchnikoff and M. Roux. The chimpanzee was also on exhibition.

August 11th.

SWITZERLAND.

(FROM OUR OWN CORRESPONDENT.)

Fracture of the Patella.

DR. H. BAERLOCHER of St. Gall has published an account of 28 cases of fracture of the patella treated at the Cantonal Hospital from 1889 to 1902 by the same surgeon, Dr. Feurer. As regards etiology only one case could be proved to be due solely to muscular effort; in all the other cases there was a direct traumatic cause. There were two severe cases of compound fracture and seven of comminuted fracture (Splitterbruch), but the majority were cases of simple subcutaneous transverse fracture. The operation was with one exception always performed within 48 hours after admission to the hospital. A longitudinal incision was made over the patella. The fractured ends of the bone were never found in apposition; they were often tilted and in almost all the cases remnants of ruptured fascia or periosteum were found interposed between them. This amply explains the rare occurrence of bony union when fracture of the patella has been treated without operation. The joint having been sponged and carefully cleansed with sterilised material (Tupfer) the fragments were united by sutures passed through the ruptured capsule and by parosteal, never by osteal, sutures. This simplified the operation and shortened its duration. The leg was immobilised for an average of four weeks (from 19 to 34 days); active and passive movements were then commenced together with faradisation of the muscles of the leg. In less than five weeks (from 22 to 42 days) the patient got up and walked about. 20 of these 28 cases regained their normal condition. Two patients died from delirium tremens, one was discharged with ankylosis, and five had slighter complications. Dr. Baerlocher saw 20 of these 28 cases and took skiagrams of some of them. All these patients had practically useful limbs; they were in good health and could continue their former occupations as labourers or handicraftsmen without any disability whatever. It thus appears that direct suture of bone to bone can be dispensed with and that the operation for fracture of the patella can be simplified.

Medical Students at Swiss Universities: Female Competition.

During the winter term 1902-03 1696 duly matriculated medical students attended the five Swiss universities, being an increase of 203, as compared with 1493 in 1901-02. This increase was especially marked with regard to the universities of Bern (532 as compared with 457), Lausanne (267 as compared with 202), and Zürich (395 as compared with 291), whereas the number at Basle remained the same (147) and at Geneva it had decreased from 396 to 355. This

increase of medical students is principally due to the circumstance that 840 female students are now studying medicine at Swiss universities, whereas there were only 665 in 1901-02. The number of female students of Swiss nationality was quite small, the overwhelming majority being Russians. This is accounted for by the fact that on the one hand it is difficult for females to study medicine and become qualified in Russia, whereas on the other hand the Swiss degree of M.D. is recognised in Russia. It is understood, however, that the Russian Government proposes to diminish the obstacles which female students at present have to encounter in that country. The number of students at the several universities was as follows: at Bern 532, including 350 females; at Zürich 395, including 156 females; at Geneva 355, including 177 females; at Lausanne 267, including 152 females; and at Basle 147, including five females. The question might soon be propounded whether one medical school in German-speaking Switzerland and one in French-speaking Switzerland, obviously Bern for the former and Lausanne for the latter, where the female students number respectively 66 per cent. and 57 per cent. of the total number of students, should not be transformed into faculties receiving only the gentle sex. Perhaps the professors might object or resign in favour of duly qualified lady professors. As a matter of fact, the male students at Bern have petitioned the Government of the canton of Bern (the universities are cantonal, not federal) that new buildings may be constructed, as they are crowded out of the place by eager female competition. At the last meeting of the general council of the canton of Bern one of the representatives brought forward a motion to the same effect, pleading for stricter matriculation examinations. So far the motion has had no practical result, for the Bernese Director of Public Instruction explained that the number of lady students would probably soon diminish owing to increased facilities for study in Russia. He also declared that the entrance examinations were sufficiently strict.

Zürich, August 6th.

EGYPT.

(FROM OUR OWN CORRESPONDENT.)

The Annual Report of the Prisons Department.

THE somewhat belated report of the Prisons Department for 1902 has just been published and, as usual, contains much interesting matter. Coles Pasha, the able head of the department, states that there were 95,359 males and 13,687 females admitted to the various prisons throughout Egypt in 1902, and in a later paragraph he gives an interesting table which shows that during the same period out of every 100,000 of the population 621 persons were admitted to prison in England, 411 in the Bombay Presidency, and as many as 1036 in Egypt. On these figures he remarks: "The comparison with the Bombay Presidency is perhaps the most interesting, as the conditions of life are almost identical with those in Egypt. Judging from the comparison, it would appear that the Egyptian is far more criminal than the native of India. In the matter of taking life on the slightest provocation I admit that the Egyptian is hard to beat, but in every other respect he is much more amenable than the native of India and I am convinced that the system of State prosecutions is responsible for this large prison population." The reformatory for boys has been transferred to the Ghizeh Prison, which is no longer used as such, and with the adoption of the new penal code for the punishment of juvenile offenders it is confidently expected that there will be a large increase in the numbers in the reformatory with a proportionate decrease of juveniles in the general prisons. On the last day of 1902 there were 83 juveniles in prison as compared with 106 in 1901, while 86 boys were sent to the reformatory during the year as compared with 40 in 1901. There were no fewer than 219 prisoners sentenced for murder during the year (and of this number 21 were women), figures which strikingly confirm Coles Pasha's remarks on the propensity of the Egyptian to homicide. As evidence also of the general lack of education in the country it is to be noted that over 32,000 of the 65,000 prisoners were entirely illiterate and but 3000 could read and write. The vital statistics show that the mortality has risen from 17 per 1000 in 1901 to 30 per 1000 in 1902 and altogether the health of the prisoners has been less satisfactory, and this in spite of the great improvements in the building and sanitary arrangements. The hygienic condition of the prisons has been good and, with the exception of a severe outbreak of typhus fever at Alexandria at the beginning of the year, no serious epidemics have occurred. This outbreak involved 198 cases with 51 deaths and no very satisfactory source of infection was discovered. In spite of the severe epidemic of cholera with which Egypt was affected last year very few isolated cases broke out in the prisons with a total mortality of only ten. The question of the prisoners' diet has been carefully investigated by the principal medical officer, Dr. R. G. Kirton, and as an appendix to the report schemes of proposed modifications are detailed. Coles Pasha's remarks on this question are very apposite. He says: "I consider Dr. Kirton has proved from a scientific point of view the insufficiency of the diets, more especially No. 1. On the other hand, the free population, from which 90 per cent. of the prisoners are drawn, do undoubtedly exist in their own homes on what science would call a starvation diet. There is a growing belief that one of the reasons for the increase of crime in this country is that prison life is too luxurious. Personally I may say that I do not admit that cleanliness means luxury to the Egyptian fellah and No. 1 diet is certainly not calculated to increase a prisoner's weight. The diet question is, however, like so many other questions in Egypt, a matter of finance. The modifications in the diet suggested by Dr. Kirton will cost an extra £5000 a year and when the financial authorities can add this amount to the annual grant of the Prisons Department the diets will be increased. It will be seen, therefore, that however anxious I am to meet the recommendations of science and, I may say, of humanity, I am powerless to do more for the present." It must be admitted also that Dr. Kirton has had very little experience in native diets, as he himself is only too ready to allow, and it may be just as well to postpone any radical changes until some further practical experiments can be made with the proposed new diet scales. From my own experience the average native is entirely indifferent both as to the quality and nature of his food, provided he has a sufficient quantity to carry him on to his next meal. The ordinary labourer works from sunrise to sunset on a minimum amount of meat and that in the form of broths, his staple food being bread, green vegetables, and all sorts of salads made largely with oil. When they are in season two or three will club together and make a meal of a large water-melon and a small flat loaf of native bread each—surely a starvation diet for a labourer. In the whole Prisons Department there are only six medical officers in regular pay and these are attached to the large prisons at Toora, Cairo, and Alexandria. In most districts the sanitary inspector or the police surgeon inspects the prisons and does all he can, but lack of money prevents any further additions to the regular staff. During the year there were 58 deaths from typhus fever, ten from cholera, eight from relapsing fever (a very small number as compared with some previous years), 44 from tuberculosis, 34 from diarrhœa and dysentery, and eight from ankylostomiasis. In spite of the erection of several new prisons there is still a great deal of overcrowding which, as Dr. Kirton points out, leads to great risks of epidemics arising and spreading and to a lowering of the resisting powers of the prisoners against any form of epidemic or contagious disease. The proportion of criminal lunatics is small, there being only 72 at present under control; 14 of these were admitted in 1902. The whole report is a record of real progress and though much hampered by want of funds a great deal has been done to abolish the former iniquities associated with this department prior to the occupation. Until quite recently prisoners had to provide their own food and have it brought to them from outside, whereas now, by the sale of articles manufactured by the prisoners, a considerable sum is realised which is in the main devoted to the purchase of better rations. It seems likely that for some time to come the extra money required for the diets will have to be provided from this source rather than from the unwilling and scanty subsidy doled out by the Ministry of Finance.

Changes at Kasr-el-Aini Hospital.

After 20 years' service in the Egyptian Government Dr. F. M. Sandwith has just resigned his post as professor of medicine in the Medical School and senior physician to the Kasr-el-Aini Hospital. In view of his exceptional services the Director-General of the Sanitary Department, on the

recommendation of the hospital council, has appointed him consulting physician. His place is taken by Dr. C. E. Tribe and Dr. Llewellyn C. P. Phillips has been selected to fill the vacancy created by Dr. Tribe's promotion. Dr. Phillips is M.D. of Cambridge and has recently taken his diploma of M.R.C.P. Lond. and has held the post of resident medical officer at the hospital for the last two years. With the enforcement of a post-graduate year for the students the supply of house physicians and house surgeons has naturally increased with much improved results in the internal administration of the hospital. Seeing also that by the removal of the lock wards, hitherto a portion of Kasr-el-Aini Hospital, to a special building in another quarter of the town nearly 40 more beds will be available, the necessity of an increase in the house officers is still more obvious. A few minor structural alterations have still to be made before the new beds are available. The whole hospital is soon to be provided with a complete installation of electric light and as the electricity will be generated on the premises all the modern applications of electricity in its clinical bearings will not be forgotten. Adequate provision will thus be made for the x-ray, the Finsen, and other forms of light treatment, and probably for high-frequency currents as well. The new laundry is rapidly approaching completion and the modernising of the whole hospital is proceeding apace. The accommodation, especially in the surgical section, is now taxed to the utmost, a very satisfactory sign of the growing confidence of the native population in the work of the hospital. Among the older inhabitants the prejudices against going to the hospital still exist to some extent, but the great increase in the number of admissions during the last few years shows that the younger generation are only too willing to avail themselves of its privileges.

The Cattle Plague.

Although fresh cases are being discovered every day the epidemic of cattle plague appears to be kept well in hand by the vigorous measures that have been adopted. Unfortunately, the serum imported from Constantinople has proved to be so badly prepared and standardised that a great many deaths have attended its use. This is particularly to be regretted, as being a preventive inoculation the mortality has been among the non-infected animals which might have escaped infection. In the course of the next week the locally manufactured serum will be ready and fresh supplies are also to arrive from India and from South Africa and it is to be hoped that safe preventive inoculation may then be carried out on a large scale. This will be an enormous undertaking, for it is almost impossible to realise the number of cattle there are in Egypt. Careful inspection of even the smallest villages leads to the discovery of a total quite out of proportion to their size, and when it is remembered that not only do the animals die, but on this account also the land has to lie idle, the loss to the individual farmer and to the country in general can be imagined. Isolated cases of the plague have occurred in the Fayoum, the province to the south of Cairo, and all the provinces of Lower Egypt have been declared to be infected.

Bubonic Plague.

Sporadic cases of bubonic plague are still being reported and at Port Said considerable anxiety was felt lest an epidemic was beginning, no less than 17 cases being discovered in one block of buildings. These were all in Greeks, but fortunately the strictest sanitary precautions were at once taken and no further cases have arisen. There have been single cases at Alexandria, Port Said, and Damietta in the last week, but there is still a dangerous centre of the disease at Damascus, from which infection may easily spread to Egypt *viâ* the various ports on the Syrian coast. On this account the strictest precautions are still being taken.

August 8th.

ASSAULT ON A DEPUTY MEDICAL OFFICER.—At the Leicester borough police-court last week a butcher named North was summoned for assaulting Dr. A. Warner, the deputy medical officer of health of the borough. The facts were that Dr. Warner went to the defendant's shop to inspect some meat which was alleged to be unfit for food and that North threatened him with a saw and a knife. The defence was that North did not know that Dr. Warner was a public official. The bench expressed the opinion that the case was a serious one and said that borough officials must be protected from occurrences of this kind. The defendant was fined £5 or a month's imprisonment.

Obituary.

JOSEPH GRIFFITHS SWAYNE, M.D. LOND., M.R.C.S. ENG., L.S.A.

Dr Joseph Griffiths Swayne died at his residence, 74, Pembroke-road, Clifton, on August 1st, in his eighty-fifth year. The deceased, who was the son of a medical practitioner of Clifton, received his medical education at the Bristol Medical School and Guy's Hospital. He obtained the gold medal for medicine and midwifery at the examination for the M.B. degree of London in 1842 and graduated M.D. of London University in 1845, having taken the qualifications of M.R.C.S. and L.S.A. in 1841. Dr. Swayne had practised in Clifton for many years and was for upwards of 20 years physician accoucheur to the Bristol General Hospital. On his resignation he was appointed consulting physician accoucheur to the institution. Dr. Swayne had been connected with the Bristol Medical School for several years and was at one time professor of midwifery at University College, Bristol. Some years ago he was entertained at dinner by the local members of the medical profession in celebration of the attainment of the fiftieth year of his teaching at the Bristol Medical School. Dr. Swayne was regarded as a high authority on midwifery and at one time had a very large consulting practice. He contributed several papers to the medical journals and was the author of "Obstetric Aphorisms for Students," which in 1893 had reached a tenth edition. He was a past president of the local branch of the British Medical Association. As an artist he possessed ability of no mean order and many of his works were shown in local exhibitions. He was also fond of singing, being at one time a prominent member of the Cathedral Choral Society and the Bristol Choral Society. In earlier life he gained distinction as an athlete and was much interested in the Volunteer movement. He leaves a son and daughter to mourn their loss. The funeral took place at Arno's Vale Cemetery on August 6th. The first portion of the service was read at All Saints' Church, Clifton, the deceased having been one of the members of the committee formed in 1863 to carry out the building of this church, with which he continued to be connected up to the time of his death. The funeral was attended by a large number of members of the medical profession of Bristol and Clifton.

WILLIAM ALPHONSO HENDERSON, L.R.C.P. & S. EDIN.

The death has just taken place at Florence, after an illness of some months' duration, of Mr. William Alphonso Henderson. Mr. Henderson obtained the diplomas of L.R.C.P. & S. Edin. in 1869 and a few years afterwards proceeded to China, where he quickly built up a large practice. He was medical officer to the Imperial Maritime Customs for some time at Chefoo and Ningpo, also medical officer of health as well as medical officer to the Presbyterian and Church of England hospitals. These important appointments entailed continuous and arduous work, apart from the exactions of a large and increasing practice, but, notwithstanding, during his long residence in China—extending over a period of 21 years—he only allowed himself one brief holiday of eight months. The result was that an otherwise fine constitution was injured and some 11 years ago he had to relinquish practice altogether.

Mr. Henderson made some able contributions to medical literature, but perhaps the most important has been on "Catarrh of the Intestines in Malarial Fever," termed "psilosis" by Dr. George Thin, "sprue" by Sir Patrick Manson, and "tropical diarrhœa" by Sir Joseph Fayrer. His interest in this subject was personal, inasmuch as his primary illnesses were of this nature. His views on the pathology of the subject, whilst not differing very materially from the above-mentioned authorities, were, perhaps, more comprehensive, for he inclined to the belief that other abdominal organs besides the intestines were profoundly modified in their functions.

A friend writes to us as follows:—William Henderson has gone to his rest, and at his graveside were many friends (all who remained of the British and American colony in Florence at this season) and if they were to write his epitaph it would be "A noble soul." In its

simplicity it would have pleased him and for its truthfulness it would have pleased all who knew him.

JOHN IVOR MURRAY, M.D., F.R.C.S., M.R.C.P. EDIN.

Dr. John Ivor Murray, who died on July 24th at his residence, 53, Addison-mansions, Kensington, London, W., had led an unusually active life and had seen much foreign service both in war and peace. He was born at Lasswade, near Edinburgh, in 1824, being the second son of Mr. John Murray, W.S., law agent to the Church of Scotland. He was educated in France and at Edinburgh University where he distinguished himself while yet a student, gaining in 1844 as a prize in the class of military surgery a commission as assistant surgeon in the army. As there was not at that time any vacancy in the Army Medical Service to which he could be appointed, Dr. Murray, having become qualified as L.R.C.S. Edin. in 1845, proceeded to China where he arrived after an adventurous voyage, making his way through Borneo and finally reaching Canton. He was in charge of the hospital at Canton during the émeute and attack on the European factories in 1846. From Canton he proceeded to Shanghai and established a large practice and built at his own cost in 1852 the first hospital for Europeans north of Hong-Kong. During this time he was an ardent collector and enriched several museums, notably the Natural History Museum of Edinburgh. When the Crimean war broke out he went directly from China to Sebastopol and was appointed second-class staff-surgeon and acting second in charge of the general hospital at Balaclava, receiving the Crimean medal and Sebastopol clasp and the Turkish medal. After returning to England in 1856 he graduated as M.D. at Edinburgh University. He was also admitted F.R.C.S. Edin. and was made Fellow of the Royal Society of Edinburgh. He was selected to accompany the late Lord Elgin on his embassy to Peking, but owing to the outbreak of the Indian Mutiny in 1857 different arrangements had to be made and he was appointed colonial surgeon of Hong-Kong. He held this position from 1858 to 1872, during which time many important improvements in sanitary matters were effected, the European mortality being reduced from 7·52 to 2·92 per cent. He was also appointed inspector of hospitals in 1863 under the contagious diseases ordinance. During his colonial surgeoncy he received from King Victor Emmanuel of Italy in 1867 and from King Carl XV. of Sweden in 1868 the Order of Merit of the First Class for assistance to scientific expeditions to China and the thanks of the Imperial and Royal Academy of Vienna for similar services.

In 1859 while in Japan he was asked by the British Consul to assist him and the Japanese authorities to choose a site for the British settlement and that on which the town of Yokohama stands was selected. In 1872 he finally returned to England and after a few years, owing to pecuniary losses, had to return to active work. He settled in Scarborough in 1875, where he soon had a large practice, holding the appointments of honorary consulting physician to the Sea-Bathing Infirmary and Cottage Hospital. He was an ardent Freemason, having held office both in China and Scarborough, and was Junior Warden of the Grand Lodge of North and East Riding of Yorkshire. Compelled by failing health, he retired to London in 1900 and was elected president for that year of the British Balneological Society. He married in 1861 the daughter of Dr. Alexander of Wooler, by whom he is survived, and also by two daughters and four sons. Two sons are in the medical profession.

Medical News.

VICTORIA UNIVERSITY.—In the Faculty of Medicine the following candidates have passed in the subjects indicated:—

FINAL EXAMINATION.

Part I.—Alexander Anderson, Yorkshire; B. M. Bennett, Owens; J. L. Browne, University; William Calverley, Archibald Cambell, Catherine Chisholm, Catherine L. Corbett, J. B. Dalton, and G. D. Dawson, Owens; Douglas Elder, University; Joseph Fletcher and Tom Glover, Owens; A. E. Griscwood and W. L. Hawksley, University; W. H. Hey, Owens; Pantland Hick, University; R. W. Higson, Owens; E. P. Hoare, University; Marshall Hooper, E. E. Hughes, and Ernest Hulme, Owens; Lancelot Hutchinson and G. J. Keane, University; Laurence Kilroe, C. E. Lea, T. W. P. Leighton, J. T. R. Macgill, Hector Mackenzie, R. N. Porter, and F. G. Ralphs, Owens; William Rotheram and J. S. Rowlands, University; J. L. Schilling and W. G. Scott, Yorkshire; James Smalley, J. F. Smith, Philip Talbot, Henry Thorp, and Leonard Thorp, Owens; T. E. Walker, University; T. W. Walker, Owens; H. W. L. Waller, University; and F. J. Walton, W. D. Wilkins, A. R. Wright, and J. S. Young, Owens.

Part II.—Roy Appleton, Yorkshire; A. N. Benson and George Binns, Owens; H. M. Birkett, Yorkshire; Alexander Boothroyd, Owens; Neville Bradley, University; *L. R. Braithwaite, Yorkshire; C. H. Bromhall, Howard Buck, G. G. Buckley, and Fred Bullough, Owens; W. H. Canter, Yorkshire; Laurence Clay, Owens; Richard Coates, Yorkshire; †Thomas Coogan, E. H. Cox, J. A. Davenport, and *J. L. Falconer, Owen; E. A. Gibson and J. L. Hawkes, University; †H. D. Haworth, Owens; H. E. Heapy and W. E. Hewitt, University; G. R. Hitchin, Hubert Hodge, and Arthur Howard, Owens; †C. A. Hughes and †A. D. Hunt, University; †A. E. Johnson and S. J. C. Johnson, Owens; G. H. Joseph, R. E. Knowles, and W. G. Lloyd, University; Harry Mallin, Yorkshire; J. de V. Mather, Owens; C. T. Matthews, Yorkshire; Hugh McManus and †D. J. Mulholland, University; R. V. A. Mosley, Yorkshire; C. S. O'Neill, Owens; Percival Pollard, Yorkshire; W. E. Rothwell, Owens; †F. H. Salisbury, University; Harold Simms, †R. T. Slinger, and J. C. Smyth, Owens; †P. K. Steele, Yorkshire; R. H. Swindells and F. P. S. Thomas, Owens; H. G. Thompson, University; Alwyn Wharton, Owens; and Henry Woods, University.

* Awarded first-class honours. † Awarded second-class honours.

SECOND EXAMINATION.

A. Anatomy and Physiology.—Frank Boothroyd, Charles Brown, and T. G. Burnett, Owens; J. S. Crawford, Yorkshire; J. G. da Cunha, Owens; F. G. Dobson, Yorkshire; J. F. Edmiston, University; A. W. Howlett, Owens; J. F. McCann, S. W. McLellan, L. D. Napier, and T. W. Parry, University; A. L. Walker, Yorkshire; B. V. Ward, Edgar Wharton, W. A. Wheeldon, and Julia C. White, Owens; and Thomas Whitehead, Yorkshire.

B. Materia Medica and Pharmacy.—Leslie Adamson, Edmund Alderson, and G. C. Barnes, University; J. P. Bibby, Yorkshire; Norman Bradly, University; Harold Coppock, C. B. Davies, Daniel Dougal, J. F. Dow, and T. B. Eames, Owens; M. L. Farmer, University; Philip Ferguson, Jane A. Fleming, and E. F. S. Green, Owens; V. C. Hackworth, Yorkshire; J. T. B. Hall, Owens; W. T. Hessel, Yorkshire; Cecil Hibbert, C. G. Howlett, and H. T. Lamb, Owens; T. E. Lister and W. O. McKane, Yorkshire; R. H. Mercer, G. C. Mort, Robert Ollerenshaw, G. F. Porter, A. E. Quine, C. H. S. Redmond, and W. H. Ross, Owens; G. F. R. Smith, F. R. Tickle, and J. A. Tobin, University; and F. D. Walker, H. G. Ward, J. S. Webster, Edgar Wharton, A. W. T. Whitworth, and William Wilson, Owens.

The Diploma in Public Health has been awarded as follows:—

W. W. Clemesha, Hugh Lawrie, Albert Ramsbottom, A. B. dos Remedios, and F. M. Rodgers.

UNIVERSITY OF EDINBURGH.—The following is the official list of passes at the recent professional examination for degrees in medicine and surgery:—

First Professional Examination.—A. D. Anderson, J. L. Annan, Marion H. Archibald, M.A., J. C. Ashton, Ernest Banks, C. B. Baxter, C. S. Baxter, J. H. Bell, A. E. Bennee, J. H. Bennett, Mary F. Bignold, F. H. Bradley, J. A. Brand, E. A. Brummitt, Thomas Buchan, Thomas Burrell, L. A. P. Burt, J. A. R. Cargill, R. J. Chapman, F. M. Chrystal, C. H. Corbett, Dennis Cotterill, Theodore Craig, H. C. D. Cross, F. W. M. Cunningham, G. H. Dart, S. K. Datta, B.A., Margaret S. Davidson, Thomas Derrick, P. S. Dias, C.A.A. Dighton, Joanna M. F. Drake, G. L. Duncan, James Eaves, L. T. Eden, Robert Edwards, J. Letitia D. Fairfield, S. B. Faulkner, E. M. Figaro, T. Y. Finlay, W. S. Forbes, P. J. Garvey, David Geddis, G. H. R. Gibson, J. B. Gibson, M.A., Grace H. Giffen, John Gilmour, I. M. Grant, J. G. Greenfield, A. R. Gunn, H. F. G. Hall, J. K. Hamilton, F. G. Harper, Hester M. Henderson, A. F. Hewat, Matthew Heyns, J. K. A. Hofmeyr, J. H. Horne, T. J. Hughes, R. L. Hutton, Spencer Jackson, *R. H. Jamieson, *T. A. Johnston, G. G. Jolly, S. W. Joubert, Beatrice Kippenberger, J. G. de Kock, David Lees, G. L. Little, James Lorimer, Thomas Lyon, A. M. Macarthur, David M'Cracken, Augus Macdonald, I. C. Mackenzie, A. & J. Macmillan, D. J. M'Rae, S. E. Malherbe, J. A. Manifold, F. W. Michael, G. G. Middleton, A. F. W. Millar, A. P. Mitchell, James Muckart, J. J. H. Nelson, Katharine B. A. Nelson, F. H. Nixey, C. F. Pattie, G. R. Pallal, W. J. Porteous, D. H. Rai, B.A., Gustav Raubenheimer, G. J. Reidy, *Barbara Richardson, C. L. D. Roberts, A. N. Robertson, David Robertson, Edmund Sharpe, F. F. S. Smith, Dorothy W. Stevenson, A. E. Tait, K. R. Tampi, B.A., R. A. Taylor, M.A., C. H. Tewsley, *David Thomson, William Thomson, William W. Thomson, V. F. Usher, A. M. Vlok, Helen M. Wakefield, J. C. B. Williams, G. S. Williamson, *James Wilson, Maria P. Winning, and W. A. Wyllie.

Second Professional Examination.—D. C. Alexander, A. C. Alport, William Anderson, George S. Banks, D. M. F. Barker, W. J. E. Bell, J. W. Bingham, E. J. Black, C. E. Blair, R. A. Blake, Gilbert Britto, Elizabeth H. Brook, J. W. Cairns, Thomas Campbell, H. M. Cargin, N. S. Carmichael, Marjorie Duake Cohen, Agnes M. Cowan, F. W. Cragg, A. B. Darling, H. A. Edwards, H. F. Fenton, C. N. Finn, J. F. Gallagher, J. A. Glover, M.A., J. M. Grant, Joseph Green, E. J. C. Groves, J. A. Gunn, M.A., J. Turner Gunn, R. W. D. Hewson, R. M. Liddell, J. A. Loughridge, F. J. Luck, J. B. Mackenzie, Murdo Mackinnon, A. C. M'Master, R. W. D.

Macrae, William Magill, Ada E. Miller, F. C. Mills, H. B. Morris, Harold Mowat, R. E. Moyes, E. B. Munro, R. E. U. Newman, H. J. Norman, C. R. O'Brien, D. H. Paul, J. L. Pearce, D. E. C. Pottinger, George Raffan, T. E. Roberts, J. R. Robertson, W. L. Robertson, Henry Sauzier, Archibald Simpson, S. A. Smith, W. T. Smith, W. B. Tannahill, *R. B. Thomson, F. J. G. Tocher, Archibald Todrick, J. H. du Tolt, W. H. Welsh, F. P. Wernicke, and Marian E. Wilson. Old Regulations—Grace R. Giffen and R. W. Telford.

Third Professional Examination.—D. J. Anderson, W. F. Archibald, G. G. Bartholomew, W. S. Murdoch Brown, *Hugh C. Buckley, V. T. Carruthers, E. A. Elder, J. J. M'L. Falconer, Laurence Gavin, O. M. Gericke, A. G. Glass, A. M. Glosg, William Godfrey, David Golding, B. V. Goldstein, V. R. Gorakshakar, William Jarvis, Faiz Jung, S. W. S. Leary, A. P. G. Lorimer, S. A. M'Clintock, James MacKenzie (Edinburgh), Amy M. Mackintosh, Alfred Malseed, M. M. Mamourian, J. B. Mears, Venancio Moralejo, John Morris, D. S. Murray, William Patton, W. J. D. Robertson, Joseph Robinson, B.Sc., L. B. Skene, C. J. Smith, R. A. L. van Someren, Alexander Stephen, M.A., George Stewart, H. M. Thompson, R. S. Enever Todd, M.A., B.Sc., Rose C. Townend, and Helen R. Vickers. Pathology only—Hugh Ferguson, C. Rose Greenfield, and A. E. C. Rees, B.A.

* With distinction.

MEDICAL MAGISTRATE.—Dr. John T. Horron Davies has been placed on the commission of the peace for the borough of Leicester.

COTTAGE HOSPITAL AT WICK.—Wick is the principal town and seaport of Caithness, a small county which forms the extreme north-east portion of Scotland. The town has a population of about 12,000 but there has not hitherto been a hospital there or in any part of the county. At a meeting held in the town hall in May, 1897, it was resolved that a cottage hospital should be provided as a memorial of the Diamond Jubilee of Queen Victoria. Funds were collected and eventually Mr. Arthur Bignold, Member of Parliament for the Wick Burghs, having purchased a house near the town standing in grounds of about an acre presented the house and grounds to the town for application as a hospital. The operation of converting the old building to its new purpose has resulted in providing two large, well lighted and ventilated wards on the upper floor, one for male and the other for female patients, together with two smaller wards for private patients or for such as require separate accommodation. The operating room is contained in a new extension at one end of the building. On going to Wick for the opening ceremony, which took place on July 13th, Mr. Bignold, the donor of the hospital, was accompanied by Sir Felix Semon and Sir Keith Fraser. In declaring the hospital open Sir Felix Semon said that he had been very favourably impressed with what he had seen, and that Mr. Bignold, from the interest which he had for many years taken in hospital work in London, was well acquainted with the requirements of such an institution. At a banquet which followed Mr. Bignold spoke strongly in favour of the maintenance of hospitals by voluntary effort, unaided by the State.

NEW OPERATING THEATRE AT KING'S LYNN.—On July 30th a new operating theatre at the West Norfolk and Lynn Hospital was opened by the Countess of Leicester. The cost was defrayed by public subscriptions in the neighbourhood, their Majesties the King and Queen heading the list with a handsome donation. A letter was read by Colonel Seppings, the chairman, from Sir Dighton Probyn wishing success to the hospital on behalf of their Majesties. The Countess of Leicester was received by Colonel Seppings and other members of the weekly board, associated with whom were the members of the medical and surgical staffs, and Mr. W. Bruce Clarke who had been invited to deliver an address on the occasion. The architect, Mr. Green, and Colonel Seppings handed a silver key of the new operating theatre to the Countess of Leicester who unlocked it and declared it to be open for use. The guests, who included many of the leading county families, went round the wards and inspected the hospital, after which they adjourned to a large marquee to hear Mr. Bruce Clarke's address. After recounting the leading features in the history of the hospital since its foundation in 1833 he dwelt on the necessity of an operating theatre furnished with all modern appliances and briefly related the main features of modern surgery. He pointed out that one of our own countrymen, Lord Lister, had shown that blood poisoning was a preventable disease, that it was introduced from the outside, and that it did not depend on anything that was circulating in the blood of the individual before his injury was inflicted or his operation was performed. An up-to-date operating theatre did not confer benefits on the patients of the hospital only but on the whole neighbourhood, for it enabled the surgeons to carry out a higher standard of work and to add constantly to their personal experience. He concluded his remarks by stating how much pleasure it gave him to assist at the opening of a new operating theatre at the Lynn Hospital, where his father had been a member of the weekly board, and within a few miles of which he had been born. At the close of the ceremony Colonel and Miss Seppings held a reception.

Dr. F. St. G. Mivart, on behalf of the Local Government Board, held an inquiry on August 5th, respecting the application to borrow £9120 for a joint isolation hospital for Trowbridge and the district. No opposition was raised.

GLOUCESTERSHIRE COUNTY INFIRMARY.—As a result of a three days' bazaar which was held recently in the grounds of the County Infirmary at Gloucester the sum of £1250 has been added to the building fund of the nurses' home of that institution.

PADSTOW WATER-SUPPLY.—On August 3rd the new reservoir supplying water to Padstow, Cornwall, was formally opened by Mr. Prideaux Brune. The scheme had been carried out at a cost of £5000, the water being transported from springs at Crackrattle.

EXETER CITY ASYLUM.—The sixteenth annual report of the Exeter City Asylum, which was presented at the meeting of the Exeter city council on August 5th, states that on Dec. 31st the asylum contained 341 patients (159 males and 182 females). During 1902 there were 70 discharges of patients and 36 deaths.

PRESENTATION TO A MEDICAL PRACTITIONER.—Dr. John Dunlop was on July 27th presented with an umbrella by the members of the Abbotsford Lodge of the Caledonian Order of United Oddfellows as a token of the high esteem in which he was held. Dr. Dunlop is leaving Glasgow for a post in London.

DONATIONS AND BEQUESTS.—Mr. Henry Bloom Noble of Villamarina, Douglas, Isle of Man, has under his will bequeathed £5000 to be employed in adapting Clifton House as a nurses' home in connexion with Noble's Isle of Man General Hospital and Dispensary, or for building a nurses' home on the site of Clifton House and enlarging the general hospital. The Liverpool Eye and Ear Infirmary and the Liverpool Hardman-street Eye and Ear Infirmary each received £1000 under the same will; the Liverpool Deaf and Dumb Institute £500; the Devonshire Hospital at Buxton £250; and the Cumberland Infirmary, the Whitehaven Infirmary, and the Kendal Memorial Hospital £200 each.

THE ASSOCIATION OF PHYSICIANS AND SURGEONS OF THE SOCIETY OF APOTHECARIES, LIMITED.—This association has been formed to bind together the Licentiates of the Society of Apothecaries of London and of the Apothecaries' Hall of Dublin in order that combined action may be taken when necessary to maintain their rights and privileges as fully qualified physicians and surgeons, and to remove the disabilities under which they at present suffer as to title. It is felt that before long an amendment of the Medical Acts will be sought by the General Medical Council and as the alteration in title can only be lawfully made by Parliament it is, the new association considers, important that there should be a body of Licentiates ready to urge their claim to modern titles as substitutes for the L.S.A. and L.A.H. Since the formation of the Conjoint Boards of the Royal Colleges in London and in Dublin respectively the diplomas granted by the Apothecaries' Societies have lost some of their former prestige and in a printed statement the association attributes this loss of prestige to the insignificance of the abbreviated titles of the diplomas when compared with those of the Conjoint Boards. The annual subscription of members is 10*s.* 6*d.* and of extra-members 5*s.* The honorary treasurer is Mr. A. Rivers-Willson, 42, Wellington-square, Oxford; and the honorary secretary is Mr. Gerald Dalton, Cranbourn Mansions, Cranbourn-street, London, W.C.

Parliamentary Intelligence.

HOUSE OF COMMONS.

THURSDAY, AUGUST 6TH.

Typhus Fever in the East.

Mr. HERBERT ROBERTS asked the Secretary of State for India whether he had received any report from the medical officers attached to the Seistan-Nushki Railway survey party, or from Colonel MacMahon's Afghan Boundary Commission with reference to the appearance in their ranks of typhus fever or to the effect that several surveyors with one or other of these expeditions had perished from thirst in the Seistan deserts; and whether he could give any particulars as to the casualties which had taken place.—Lord GEORGE HAMILTON replied: I informed the hon. Member for North Manchester on July 30th that I had received no information as to the prevalence of typhus fever among the workers of the Quetta-Nushki Railway. As to the Seistan Irrigation and Boundary Commission it appears from Colonel MacMahon's reports that typhus fever is very prevalent in Seistan and that there was an outbreak in his camp early in May, six cases having occurred, of which five were fatal. Steps were at once taken for segregation and Colonel MacMahon reported on June 8th that his camp had a clean bill of health. On June 24th he reported the deaths of a native surveyor and three subordinates owing to the failure of their water-supply.

Adulterated Whisky.

Mr. KILBRIDE asked the Chancellor of the Exchequer whether he proposed to take any, and if so, what, steps with the view of securing the purity and maturity of alcoholic drinks; whether he had received any official reports showing that adulterated whisky was a cause of lunacy; and whether he would consider the advisability of setting up a standard of purity for spirits in the interest of public health.—Sir WILFRID LAWSON: Will the right hon. gentleman also say whether he has any official information showing the evils done by unadulterated whisky?—Mr. RITCHIE replied: I am afraid that the latter question is rather too large to be addressed across the floor of the House. With regard to the question by Mr. Kilbride the answer to the first two portions is in the negative. Of course, I shall be glad to consider any evidence or representations on the subject that may be laid before me.

Mr. MACVEAGH: May I ask the right hon. gentleman whether he has received any report as to the agitation in Glasgow on the subject of lunacy following the consumption of Scotch whisky?

No answer was given.

Trained Nurses and Nuns.

On the vote for the Local Government Board for Ireland, Mr. FARRELL said that owing to the action of the Local Government Board the nuns who had hitherto been the nurses in the Granard union hospital had had to retire and their place was now taken by lay nurses who were a considerable expense to the ratepayers. He did not object to the system of trained nurses, but he objected to the way in which the change had been carried out. Friction was brought about in the first place by the medical officer of the union who began to make adverse reports on the nuns. The latter bore with all the insults for four years, but in 1900 the position of affairs became intolerable. The inspector of the Local Government Board who was sent down in 1900 patched up a peace to which all parties agreed and the Local Government Board was largely to blame in the matter because it did not adhere to the arrangement made by that gentleman. In the end the Local Government Board, instead of deciding the personal issue, censuring those who ought to be censured, and laying down a course to be followed by the officials in future, sent an ultimatum to the board of guardians which it threatened to dissolve. The bishop, finding that there was no redress for the nuns, withdrew them from the institution and left the Local Government Board to find a way out of the difficulty.

Mr. WYNDHAM replied that no reflection whatever was cast upon the nuns. These ladies were doing excellent work in the union hospitals at great personal self-sacrifice and as their services were most acceptable to the patients it would be a great loss to the people of Ireland if they were to retire from the workhouses. But the nuns did not care to perform and, indeed, ought not to be asked to perform, some parts of hospital work and therefore it was essential that they should have the assistance of trained nurses. He had always expressed the view that the rates pressed heavily on the people of Ireland, but undoubtedly the desire for a higher standard of nursing now prevailed and, indeed, the guardians of the Granard union admitted its necessity. If therefore Dr. J. M. S. Kenny expressed regret for the manner in which he made some of his complaints with respect to the nuns why should not those ladies return to the Granard workhouse and bring to an end a lamentable state of things?

Mr. T. M. HEALY said that his sympathy was entirely with the ratepayers. Every fad of a medical man—the discovery of a new disease or a new cure—was certain to receive the support of the Irish Local Government Board. One did not read of these diseases and cures in Shakespeare or the Bible. The people of those days led as healthful lives as the people of to-day although they had no Local Government Board to look after them. If medical fads were to be carried out let it be not at the expense of the local ratepayers but at the cost of the Imperial faddists. In a small union hospital they must not expect all the environment they might find in Guy's or St. Thomas's Hospital. The conclusion which he drew from the whole matter was that there should be some more representative people on the Local Government Board. The idea of making people happier and more comfortable was the last thing that entered into the minds of these gentlemen.

The matter then dropped.

FRIDAY, AUGUST 7TH.

The Motor-car Bill and Medical Men.

At the end of a 15 hours' sitting in connexion with the Motor-car Bill,

Mr. SCOTT MONTAGU moved the insertion of the following new clause, which explains itself: "A medical man driving a motor-car or cycle for the purpose of attending a patient who is in urgent need of his assistance shall not be liable to any penalties for exceeding the limit of speed provided under this Act."

Mr. LONG opposed the proposal on the ground that it was unnecessary. A medical man was always known in his district and no policeman would interfere with him.

Mr. SCOTT MONTAGU said that he knew of a case in which a medical man had been fined in such circumstances.

Major JAMESON appealed to the President of the Local Government Board to accept the amendment.

Mr. SCOTT MONTAGU said that he felt very strongly upon the point which, he mentioned, had been taken up by several of the medical journals. He could assure Mr. Long that the matter was not trivial.

The proposed new clause was negatived without a division.

MONDAY, AUGUST 10TH.

The Case of Dr. McCarthy.

Dr. E. C. THOMPSON asked the Chief Secretary to the Lord Lieutenant of Ireland, whether he would explain why the Local Government Board for Ireland had informed Dr. McCarthy, who recently held for a few days the temporary appointment of medical officer of Tullamore Dispensary, that his conduct in resigning the appointment would be inquired into by a medical inspector and that if it was found that he had resigned without sufficient cause he would be prohibited in future from holding any Poor-law appointment; and whether he would state under what statute or by-law the Local Government Board had so acted.—Mr. WYNDHAM replied: Dr. McCarthy refused to enter upon the duties of the office to which he had been appointed with the approval of the Local Government Board. The Board thereupon requested the guardians to call upon him to take up his duties and stated that in the event of his still refusing to do so an inquiry would be held into the circumstances with a view to his removal from the office by sealed order. The authority for the Board's action in the case will be found in Sections 8 and 16 of the Poor Relief Act of 1851.

Salaries of Dispensary Medical Officers.

Dr. THOMPSON asked the Chief Secretary to the Lord Lieutenant of Ireland why the Local Government Board had refused in several instances recently to sanction an increase of salary granted to dispensary medical officers by boards of guardians.—Mr. WYNDHAM replied: Every application for an increase of salary receives the careful consideration of the Local Government Board and in any case in which the Board refuses to sanction an increase the reasons are fully communicated to the board of guardians concerned. If the honourable Member will give a reference to the particular case in which he is interested the reasons upon which the Board's decision was based will be ascertained.

Medical Officers with the Nigeria Force.

Mr. CHURCHILL asked the Secretary of State for the Colonies whether he would state how many medical officers and veterinary surgeons were serving with the Northern Nigeria Force during the month of June last.—Mr. CHAMBERLAIN replied: The establishment of the medical department in Northern Nigeria whose duties include attendance on both military and the civil officials, contains 27 medical officers, of whom, owing to the absence of the remainder on leave, about 18 are usually in the Protectorate. The Kano-Sokoto expeditionary force was formally broken up in March and the small body of troops which has since been in the field has been engaged in the pursuit of the ex-Sultan of Sokoto. I have no information as to the number of medical officers or veterinary surgeons attached to this small force.

TUESDAY, AUGUST 11TH.

Medical Consultations in Ireland.

Dr. THOMPSON asked the Chief Secretary to the Lord Lieutenant of Ireland whether he was aware of a circular issued from the office of the Inspector-General of the Royal Irish Constabulary, dated July 20th, 1903, which forbids the medical attendants of the Royal Irish Constabulary calling in consultation any other medical man or specialist in any circumstances and, if so, whether he would cause the instant withdrawal of the circular.—Mr. WYNDHAM replied: The circular merely recited a rule which has been in operation for upwards of 30 years. The rule in no way prevents sick members of the force from employing medical men other than the police medical attendants. It merely points out that such medical assistance cannot be paid from public funds. It is not proposed to withdraw the circular.

WEDNESDAY, AUGUST 12TH.

Grievances of Irish Medical Officers.

Dr. THOMPSON asked the Chief Secretary to the Lord Lieutenant of Ireland whether the Irish Poor-law medical officers would be afforded any, and what, opportunity of having their alleged grievances inquired into by the Government and whether he would explain the reason why no notice had been taken hitherto of their remonstrances.—Mr. WYNDHAM replied: Any report which the Poor-law medical officers may make in writing in respect of their alleged grievances will be considered. No such representations have recently been addressed to the Local Government Board.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, 8, Henrietta-street, Covent-garden, W.C.

Studies in Comparative Odontology. By Arthur S. Underwood, M.R.C.S., L.D.S., Professor of Dental Surgery, King's College, London. Price 5s. net.

BELL, GEORGE AND SONS, 4, York-street, Covent Garden, W.C.

Physical Chemistry for Physicians and Biologists. By Dr. Ernst Cohen, Professor of General and Inorganic Chemistry in the University of Utrecht. Authorised Translation from the German by Martin H. Fischer, M.D., Instructor in Physiology in the University of California. Price 6s. net.

BRITISH MUSEUM (NATURAL HISTORY), Cromwell-road, S.W.

A Monograph of the Tsetse-Flies (Genus Glossina, Westwood). Based on the Collection in the British Museum. By Ernest Edward Austen. With a Chapter on Mouth-Parts by H. J. Hansen, Phil. Doc. Price 15s.

COLLINGRIDGE, W. H. AND L., 148 & 149, Aldersgate-street, E.C.

Packing and Selling Fruit and Vegetables for Cottagers and Small Holders of Land. Gold Medal Essay. By R. Lewis Castle, F.R.H.S., Eight years Manager of a Midland Fruit Farm. Written for the Worshipful Company of Fruiterers. Price 1s.

HILL, WALTER, 71, Southampton-row, W.C.

The Holidays, 1903. Where to Stay and What to See. Price 1s.

HIRSCHWALD, AUGUST, Unter den Linden, 68, Berlin, N.W.

Die Periodizität der Diphtherie und ihre Ursachen. Epidemiologische Untersuchung. Von Dr. Adolf Gottstein, Arzt in Berlin. Price M. 1. 20

Das Problem der Syphilis und die Legende von der specifischen Wirkung des Quecksilbers und Jods. Von Prof. Dr. O. Rosenbach, in Berlin. Price M. 2.

KEGAN PAUL, TRENCH, TRÜBNER, AND CO., LTD., Paternoster House, Charing Cross-road, W.C.

B. Bradshaw's Dictionary of Mineral Waters, Climatic Health Resorts, Sea Baths, and Hydropathic Establishments. 1903. Price 2s. 6d.

Notes of My Life. By George Wyld, M.D. Edin. Price 3s. 6d. net.

KIMPTON, HENRY, 13, Furnival-street, Holborn, E.C.

Surgical Anatomy and Operative Surgery. By John J. McGrath, M.D., Professor of Surgical Anatomy and Operative Surgery at the New York Post-Graduate Medical School. Price 12s. net.

LEWIS, H. K., 136, Gower-street, W.C.

A Manual of Ophthalmic Practice. By Charles Higgens, F.R.C.S.E., Ophthalmic Surgeon to Guy's Hospital. Second edition, revised and edited by Arthur W. Ormond, F.R.C.S.E., Assistant Surgeon, Royal Eye Hospital, Southwark. Price 7s. 6d.

Transactions of the Dermatological Society of Great Britain and Ireland. Edited by Arthur Shillitoe, F.R.C.S., and Wilfrid B. Warde, M.D. 1902-1903. Volume the ninth. Price 5s.

MALOINE, A., 23-25, rue de l'École-de-Médecine, Paris.

Traité d'Analyse Chimique Quantitative. Par le Dr. Blais Pharmacien de 1re Classe. Price 6 francs.

L'Extirpation du Cancer du Sein. Par le Dr. Mériel, Ancien chef de Clinique Chirurgicale à la Faculté de Médecine de Toulouse. Price 4 francs.

MASSON ET CIE, 120, Boulevard Saint-Germain, Paris.

Traité de Pathologie Générale. Publié par Ch. Bouchard, Membre de l'Institut, Professeur de Pathologie Générale à la Faculté de Médecine. Tomes I. et II., chacun 18 francs; Tome III., 28 francs; Tome IV., 16 francs; Tome V., 28 francs; Tome VI., 18 francs.

OFFICE OF THE SUPERINTENDENT OF GOVERNMENT PRINTING, Calcutta.

On the Action of the Venoms of the Cobra (Naja Tripudians) and of the Daboia (Daboia Russellii) on the Red Blood Corpuscles and on the Blood Plasma. By George Lamb, M.D., Captain I.M.S. (Scientific Memoirs by Officers of the Medical and Sanitary Departments of the Government of India, No. 4). Price As. 8, or 9d.

SCIENTIFIC PRESS, LIMITED, 28 and 29, Southampton-street, W.C.

Sight and Hearing in Childhood. By Robert Brudenell Carter, F.R.C.S., Consulting Ophthalmic Surgeon to St. George's Hospital, and Arthur H. Cheatle, F.R.C.S., Assistant Aural Surgeon to King's College Hospital. Price 2s. net.

SIMPKIN, MARSHALL AND CO., 4, Stationers' Hall-court, E.C.

Musical Service: Is it Right? By James Neil, M.A. Second edition. Enlarged. Price not stated.

STANFORD, EDWARD, 12, 13, and 14, Long-acre, W.C.

Public Schools and the War in South Africa, 1899-1902. Some Facts, Figures, and Comparisons, with a List of Specially Distinguished Officers. By A. H. H. Maclean. Price 1s. 6d.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

FERGUS, WM. J. BREERETON, M.B., B.Ch., B.A.O. R.U.I., has been appointed Assistant House Surgeon and Visiting Surgeon to the Stockport Infirmary.

JONES, OWEN CLAYTON, M.B. Oxon., M.R.C.S., L.R.C.P. Lond., L.S.A., has been appointed Medical Officer of Health for the Silverton District by the Tiverton Board of Guardians.

KITCHIN, PERCY, M.R.C.S., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory Act for the Newport District of the County of Salop.

LAVERY, J. P., L.R.C.P. & S. Edin., has been appointed Certifying Surgeon under the Factory Act for the Dundalk District of the County of Louth.

SMITH, J., M.B., C.M. Aberd., has been appointed Medical Officer to the Nottingham Board of Guardians.

TUXFORD, ARTHUR W., M.B., M.R.C.S., L.R.C.P., D.P.H., has been appointed Resident Medical Officer to the Baguley Sanatorium, near Manchester.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BIRKENHEAD AND WIRRAL CHILDREN'S HOSPITAL, Woodchurch-road, Birkenhead.—House Surgeon. Salary £100 per annum, with board, residence, and laundry.

CANCER HOSPITAL (FREE) Fulham-road, S.W.—House Surgeon for six months, renewable. Salary £70 per annum, with board and residence.

CLAYTON HOSPITAL AND WAKEFIELD GENERAL DISPENSARY.—Junior House Surgeon, unmarried. Salary £70 per annum, with board, lodgings, and washing.

DEVON COUNTY ASYLUM, Exminster.—Third Assistant Medical Officer. Salary £125, rising to £155, with board, lodging, washing, and attendance.

HULL CITY AND COUNTY LUNATIC ASYLUM.—Second Assistant Medical Officer, unmarried. Salary £150 per annum, with board, apartments, washing, and attendance.

ISLE OF MAN GENERAL HOSPITAL AND DISPENSARY, Douglas, Isle of Man.—Resident House Surgeon, unmarried. Salary £82 a year, with board and washing.

KENT AND CANTERBURY HOSPITAL.—House Physician, unmarried. Salary £90 a year, with board and lodging.

MACCLESFIELD GENERAL INFIRMARY.—Junior House Surgeon. Salary £70 per annum, with board and residence.

NEWCASTLE-ON-TYNE, HOSPITAL FOR SICK CHILDREN.—Male Resident Medical Officer. Salary £100, with board, lodgings, and laundry.

NORTHAMPTON GENERAL HOSPITAL.—Honorary Dental Surgeon.

PARISH OF BARRA.—Medical Officer and Public Vaccinator. Salary £119.

PARISH OF ST. LEONARD, Shoreditch.—Medical Officer for the Holywell District. Salary £100 per annum.

PECKHAM HOUSE ASYLUM, Peckham, S.E.—Junior Assistant Medical Officer. Salary £150 per annum, with board, residence, and laundry.

PRESTON, LANCASHIRE COUNTY ASYLUM, Whittingham.—Assistant Medical Officer, unmarried. Initial salary £175, with apartments, board, washing, and attendance.

ST. PETER'S HOSPITAL FOR STONE, &c., Henrietta-street, Covent-garden, W.C.—House Surgeon for six months. Salary at rate of £100 a year, with board, lodging, and washing.

STOCKPORT INFIRMARY.—Junior Assistant House Surgeon for six months. Salary at rate of £40 per annum, with board, washing, and residence.

WALLASEY DISPENSARY AND VICTORIA CENTRAL HOSPITAL, Liscard.—House Surgeon, unmarried. Salary £100, with apartments, board, and service.

WEST AFRICAN MEDICAL STAFF.—Seven Medical Officers. Salary £400 to £500 a year, with quarters, &c.

WESTMINSTER HOSPITAL (opposite Westminster Abbey).—Assistant House Surgeon.

WILLESDEN ISOLATION HOSPITAL.—Medical Superintendent. Salary £350 per annum.

Births, Marriages, and Deaths.

BIRTHS.

BARBER.—On August 5th, at Conisbro, Leigham-court-road, S.W., the wife of Frederic S. Barber, M.R.C.S., L.R.C.P. Lond., of a son.

CLARKE.—On August 5th, at Mena House, Horley, Surrey, the wife of S. Arathoon Clarke, M.R.C.S., L.R.C.P. Lond., of a son.

CORBEN.—On August 7th, at The Grove, Caldicot, Mon., the wife of Charles Corben, M.R.C.S., L.R.C.P. Lond., of a daughter.

COUTTS.—On August 7th, at 50, Wallwood-road, Leytonstone, the wife of F. J. Coutts, M.D., B.S. Lond., of a daughter.

HARVEY.—On August 2nd, at 117A, Queen's Gate, S.W., the wife of Sidney Harvey, of a son.

MARRIAGE.

WAKLEY—BARRON.—On Saturday, August 8th, at St. Mary Abbot's Church, Kensington, by the Rev. Prebendary R. Digby Ram, M.A., Vicar of Hampton-on-Thames, assisted by the Rev. G. A. Lewis, M.A., Vicar of Thornton Heath, cousin of the bridegroom, and the Rev. H. H. Lowe, M.A., Thomas Wakley, only son of Thomas Henry Wakley, F.R.C.S., and grandson of the late Thomas Wakley, M.P., to Gladys Muriel Barron, eldest daughter of the late Norman Barron and of Mrs. Norman Barron, of Elberton, Gloucestershire, and grand-daughter of the late Dr. G. B. Barron, J.P., of Southport.

DEATHS.

BALFOUR.—On August 9th, at Westfield, Colinton, Midlothian, George William Balfour, M.D. St. And., F.R.C.P. Edin., LL.D., one of His Majesty's Physicians-in-Ordinary for Scotland, in his 81st year.

TANNER.—On August 8th, at Ben Rhydding, Yorks, Esther (Ettie), the beloved wife of John Tanner, M.D., 19, Queen Anne-street, W., suddenly at last, after a long and distressing illness, aged 57 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

SANITATION AND BUNGALOWS.

A CORRESPONDENT sends us the following statement concerning "Bungalow Town," Lancing or Shoreham Beach.

There are about 200 of these bungalows of various sizes, some evidently inhabited by well-to-do families with three or four servants, and the "town" extends from Shoreham Harbour to within a short distance (about a mile) of Worthing. Cards are issued, headed in large letters "Sanitary Rules," which provide *inter alia* that "washing or greasy water and vegetable matter must be emptied into the sea *at low tide*," "tin cans to be buried by the sanitary men," &c. The first rule is as follows: "Each bungalow to have two enamelled w.c. pails which will be emptied once a day." On August 8th and 9th, when on the beach at 10.30 A.M., it being then nearly high tide, the "sanitary men" were engaged going up and down the beach, making their way amongst ladies and children with the "enamelled w.c. pails," the contents of which were then tossed by them into the surf, with results which, I need hardly say, were disgusting both to the eyes and to the nose. As the tide was coming in lumps of excrement (to say nothing of household refuse) were washed upon the shore and there remained. I was told that this work had been going on since an early hour in the morning, during which time the tide, it will be observed, had been approaching its height, and that there were only two men employed for the whole of the "town." It was resumed in the evening. Possibly the danger of this state of things is not great, although it is conceivable that, in the event of enteric fever occurring in one of the bungalows, it might become very appreciable and that swimmers, at any rate, might have fulfilled on them the curse of Rab-shakeh (2 Kings, xviii., 27) with something more than the present consequences, nauseating as these may be. But the outrage against ordinary decency is the most amazing thing I have seen for a very long time in this country or in any other. I believe some stir was made about this place some two or three years ago, but I cannot now refer to it and evidently it "blew over."

The state of affairs depicted in our correspondent's communication is very revolting and we hope that the sanitary authorities will inquire into the matter at once.

A NEW PHASE OF HOSPITAL ABUSE.

To the Editors of THE LANCET.

SIRS,—Instances of imposition on hospitals are so numerous as to make it superfluous to record them. The following, however, presents points which seem quite novel. A poor patient of mine attended a throat and ear hospital and in relating her experiences there said that next to her in the waiting room was "quite a lady" who had brought her child to have the tonsils excised, and that this lady told her that she had brought her own medical attendant with her "to see that it was done properly" and that she was going to pay him three guineas for coming. I wonder what the operator would have said if he knew that? If medical men themselves help in such imposition they cannot be surprised if their well-to-do patients go to the hospitals on their own account. On the other hand, I cannot say that I sympathise with the staffs of hospitals, because in the inquiry that took place a few years back the gist of their evidence seemed to be that they (or, at all events, many of them) thought that all those who could not afford their consulting fees were fit recipients for hospital relief. But this is irrelevant to the case I draw attention to.

I am, Sirs, yours faithfully,

August 10th, 1903. J. J. UDALE.

THE PATENTING OF SURGICAL INSTRUMENTS.

To the Editors of THE LANCET.

SIRS,—A search through a file of the *Official Journal of Patents* will serve to show that your opinions regarding the patenting of medical and surgical apparatus are not shared by many in the profession. Medical men do patent such apparatus and receive royalties on their sale and there is no just and valid reason why they should not. The author of a medical book protects the product of his brains by copyright and receives a royalty on each copy sold. THE LANCET bears on its cover "All rights reserved," and, I presume, is copyrighted with the object of protecting its contents against piracy, so that anyone wishing to see any original article must buy the copy of THE LANCET in which it appears.

An invention is the product of brains, equally with the writing of a book or an original article in a journal. Then why should protection by patent of an invention be different to protection of printed matter by copyright? The reason why there still exists some prejudice against surgical patents is that formerly the Government charges were unduly heavy, a price had to be put on a patented article much in excess of the cost of production, and this tended to restrict its general employment. This is all altered and £3 is all the Patent Office requires in fees for the complete patent for four years. The country is deluged with cheap and nasty foreign-made instruments and surgical patents would benefit the profession at large. The manufacture would then be under the control of the original inventor which would be a guarantee of excellence and the importation of cheap and inferior German imitations prevented.

I am, Sirs, yours faithfully,

July 27th, 1903. PATENTEE.

*** The copyright of a medical book may certainly bring in profit to someone, and the profit is analogous to royalties under a patent. But our correspondent fails to see the complete difference in the two cases. In one case a monopoly for individual gain is secured and the medical profession are hampered in their use of what may be a valuable adjunct to treatment. In the other case information is being disseminated to the medical profession for the public good. We deal with the point in an annotation.—ED. L.

A POINT UNDER THE INFECTIOUS DISEASES NOTIFICATION ACT.

To the Editors of THE LANCET.

SIRS,—I should much like to have your opinion upon the following matter. Some time ago I attended a case which after much deliberation I diagnosed as typhoid fever. Two days after I sent in the usual notification form to the medical officer of health of the district that gentleman called and informed my wife—I was away from home at the time—that as the case was *in extremis* he had not reported the matter. Of course, I took no notice of the communication as I could not see what the condition of the patient had to do with the nature of the disease and its notification. In this urban district we have no hospital for infectious disease except small-pox, and though cases are notified we cannot have them removed. I am about to send in my half-yearly bill to the local board and I have a difficulty in deciding whether I should include the case or not. If I do not include it I am practically admitting that the case was not one of typhoid fever and that my notification was wrong; and if I do include it and the particular case is struck out and not paid for I should like to understand what is my legal position in the matter. Thanking you in anticipation,

I am, Sirs, yours faithfully,

August 11th, 1903. LUX.

*** Our correspondent should include the case. As to his legal position he should consult his legal advisers.—ED. L.

HOMES FOR THE WEIR-MITCHELL TREATMENT.

To the Editors of THE LANCET.

SIRS,—Can any reader kindly inform me in next week's issue if there is any home or hospital where a patient could undergo the Weir-Mitchell treatment at a reasonable cost?

I am, Sirs, yours faithfully,

August 10th, 1903. W. E. F. T.

ERRATUM.—In a letter headed "A Dangerous Pamphlet," which appeared on p. 434 of THE LANCET of August 8th, the word "foreigners" which occurred in line 12 should have been *for years*.

J. P. B.—In the present state of the law we are afraid that nothing can be done to check such advertisements as that to which our correspondent refers. We doubt whether any court would accept the opinion that an obvious quack calling himself "the popular Canadian M.D." thereby implies that he is registered under the Medical Acts.

Mr. Arthur Seaton.—We do not give the kind of information sought from us. The general story of the crime can be found in the Annual Register and in all the obvious places.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

During the week marked copies of the following newspapers have been received: *Engineer, Irish Times, Literary Digest, Yorkshire Post, Yorkshire Daily Observer, Times of India, Aberdeen Free Press (Weekly), Pioneer Mail (India), Dublin Evening Telegraph, Echo, Bradford Observer, Daily Express, Westminster Gazette, Windsor and Eton Express, Derbyshire Courier, Derbyshire Times, Reading Mercury, Herts Advertiser, Daily Telegraph, Manchester Weekly Chronicle, Broad Arrow, &c.*

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, August 13th, 1903.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radiation in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks at 8.30 A.M.
Aug. 7	30·17	S.W.	...	121	72	52	55	60	Bright
,, 8	29·90	S.	...	128	78	57	59	67	Bright
,, 9	29·73	W.	0·25	124	74	56	60	66	Cloudy
,, 10	29·67	W.	0·41	95	69	55	56	60	Cloudy
,, 11	29·92	S.	1·25	99	65	53	54	57	Cloudy
,, 12	29·85	N.W.	...	105	71	56	57	60	Cloudy
,, 13	29·94	W.	...	116	71	55	56	61	Cloudy

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (17th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.).

TUESDAY (18th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Royal Ear (3 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.). Throat Golden-square (9.30 A.M.), Soho-square (2 P.M.).

WEDNESDAY (19th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.) Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M).

THURSDAY (20th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat, (9.30 A.M.), St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

FRIDAY (21st).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.).

SATURDAY (22nd).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (17th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—3 P.M. Mr. Paget: Surgical Cases.

TUESDAY (18th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. Russell: Peripheral Neuritis.

WEDNESDAY (19th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith road, W.).—4 P.M. Dr. Russell: Medical Cases. (Medical wards.)

THURSDAY (20th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. Davis: On Some Diseases of the Stomach.

FRIDAY (21st).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. Abraham: Skin Cases.

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It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

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Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

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